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PSYCHOLOGY AND PHILOSOPHY.

I.—THE CEREBRAL CORTEX AND ITS WORK.

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I.

The comparative anatomy of the nervous system in the lower animals proves that creatures having no cerebral hemispheres, or having the rudiments only of them, are capable of much keen and varied bodily activity in response to the impressions made upon their senses. They possess not, it is true, the various nice and intricate movements of fingers and hands, the exquisitely fine and complex movements of speech, the delicate motor waves of human expression, the many scarce-noticed muscular tensions that accompany the different thoughts and feelings which are man's rich possession; but in respect of the gross movements of locomotion, of defence, of attack, of escape, of the seizing of food, of propagation of the kind, they are abundantly endowed. In face of this plain and weighty fact, it is natural to ask how far the intervention of the cerebral hemispheres is necessary to the performance of the same classes of movements in man. May not his spinal and sensory with their associated proper motor centres be capable by themselves of actuating similar movements in him?

In seeking the answer to this question, it is plainly of paramount importance to take account of the great difference in the position and relations of the spinal and sensory centres in those animals that have not and those animals that have cerebral hemispheres. In the former they are sole and self-sufficing, while in the latter they are intimately bound up with structures of another and higher order. In the one case we have to do with a formed nervous structure, definitely set and wholly appropriated to certain fixed functions, unconnected with any higher structure, incapable of further evolution, and pretty nearly incapable of modification; in the other case, with a *forming* rather than a *formed* nervous structure, since new and intimately connected parts are superposed which are plastic to new uses and thereby undergo processes of internal organisation. The result is that the one can learn and improve—can be *in-formed* to new and higher uses—and that the other cannot. The cerebral hemispheres are virtually growing structures; they have grown in the long past from mere rudiments, such as they are in fishes, to their most complex development in man, in whom they perhaps still grow slowly through the ages. In them the plastic energy of organic evolution is doing its latest and highest work; there is nothing higher to temper the mighty conceit which it has of itself in doing such work.

By the superposition of cerebral hemispheres and their intimate structural connexions with the lower nerve-centres, these are deprived of the simple autonomy which they have in animals that are without cerebral hemispheres. They are no longer sole and self-sufficing; the impressions they receive, instead of provoking instant motor reactions, can now pass beyond them and be otherwise dealt with. If I go to the edge of a pond in which there are carp that are not accustomed to be fed and throw in a piece of bread, they dart away instantly, so many flashing lines of life, as if from a great danger. The flight is an instant instinctive act with which the rudimentary cerebral hemispheres may have nothing to do, and at any rate is just what creatures without cerebral hemispheres would do: it is an instant fit muscular response of escape made to an alarming impression of sense. If I go to the edge of the same pond after the same fish have been accustomed to be fed and throw in a piece of bread, they rush forward the moment they see me and dart at the bread as rapidly as they formerly darted from it. A visual impression seemingly exactly similar is now followed by movement in an exactly opposite direction,

the fish having learned by experience that no harm but good followed it. The impulse of the impression is manifestly not carried along the same nervous track throughout in both instances; for it cannot be imagined to have such intelligence and freedom in itself as to be able, if it went along the same track, to give a different motor message: it is molecular motion simply, and issues in a different motor outcome only because of its transmission by different physical tracks. An alternative course is the basis of the seeming spontaneity. The presumption is, that in the one instance it goes directly across from the sensory to the proper motor machinery, and that in the other the direct transit does not take place, but that it goes across along a track which has been opened up by experience in new ground—that is to say, in the available, unappropriated nerve-paths of the rudimentary cerebral hemispheres. Where else could the current of activity go when its ordinary path was blocked and no path on the same level was open to it?[1]

What I desire now to bring into particular notice is that when the fish dart forwards the same actual motor machinery is put to work as when they dart away; they have not learnt a new series of movements, but have learnt to break an old circuit and to join the visual impression to the motor machinery by a new circuit reversing the movements. The current along the new circuit is another message, and it is this circuit or new message which we suppose the cerebral hemispheres to minister to. For what is the mental significance which the new process undoubtedly has? The fish has enlarged its experience and profited by it, as we may say in the simplest terms descriptive of the event—has ex-

[1] *Blocked* only because it is probably easier in that case for the current to pass it by and go along the other track. It is pretty and instructive to watch the gradual process of learning by which the fish come at last to approach eagerly that which they shunned wildly at first. With them, as with higher creatures, it is not mature and cautious age, but rash and enterprising youth, which initiates variations; for it is the small creatures that first overcome their fears and venture to try the unknown, and it is after they have come to no harm by their tentative ventures, but on the contrary have made a profitable experience or discovery, that the older ones, leaving their conservative ruts, follow cautiously in their train. It is the visual impression of possible food which tempts the young, the hungry impulse of inexperience which overcomes their first fears. If we make the fanciful conception of all the fishes as constituting one organism, we perceive that it is the youngest, the least organised and most plastic substance which lends itself to variations, timely or untimely.

tended and discriminated its feeling of fact and adapted its action accordingly; it feels not now, or, if feeling, arrests, its former urgent impulse and reflects the current of the impression on to another track, which has been so *in-formed* to receive and transmit it; in others words, it performs an act of reflection and comes to another conclusion—namely, to reverse the action of its motor machinery; not otherwise than as an engine-driver who was going at full speed in one direction might, on perceiving a special signal, reverse his engine and go full speed in the opposite direction. The immediate nervous mechanism of the fit action is not then in the hemispheres; it remains where and what it was; all that the hemisphere presumably does is to link the visual impressions to it by new nervous arrangements that represent or embody a new adaptation—to formulate structurally an acquired experience or knowledge, and thus to organise or establish the capacity of using that knowledge to direct the action of the fish in time to come. The process is a veritable process of informing, literally an information, the informed structure embodying statically in its form or character and effecting dynamically the fit purpose or aim. To realise in imagination what takes place is to attend at the lowest foundation or the beginnings of a mental organisation. Unfortunately for our peace of mind we need two languages to describe the fact according as it is imagined from within or seen from without: in the one we must say that the new act is dictated by knowledge or reason; in the other, that the impulse passes along definitely organised nervous tracts which, representing in the particular forms or patterns of their combinations or arrangements new fit motor adjustments to particular impressions from the outer world, thus embody implicitly in structure what they display explicitly in function.

If the carp's actual motor machinery in darting to and from the visual object be the same, what is the exact proper function of the excitomotor track of the cerebral cortex which presumably comes into play in the one case and not in the other? Judging from physiological experiments made on the brains of higher animals, we may fairly conclude that if a certain limited area in the forepart of the cortex of the rudimentary hemisphere were suitably stimulated by an electric current, there would be a particular motor effect, as there would most likely be a loss of perception of the object, a mental blindness to it, if a suitable connected area in the hindpart of the cortex were removed or destroyed; the wholeness and soundness of the

track and its terminals being the necessary conditions of the proper perception. But what would the probable motor effect be in the case of the supposed stimulation? The movements of bodily progression simply, without regard to whether to or from the object. That almost certainly would be the effect of any stimulus which the experimenter applied, coarse and diffused as it could not fail to be, however fine and exact he might endeavour to make it. What would be wanting to the movement would be just its important mental element—namely, a new informed perception of the visual object and a consequent guidance of the mere machine-like movements to a new end in relation to it. That work the new nerve-tracts of the cortex presumably do, their unseen function taking its visible mechanical effect through the connected coarser machinery. If this be a right view of the matter, it is not impossible to conceive that the application of a fine enough stimulus, with exact nicety of strength and limitation of impact to the particular nerve-track concerned, might arouse the mental conception, without necessarily exciting the subordinate motor machinery.

In the mental elements which have thus been added to the mere machine-like movements of the carp, in the new informed perception, that is to say, are there any motor additions? It does not appear how a new track could be formed otherwise. If the perception means a cerebral reflex, as it presumably does, movements of reaction must have been requisite to constitute it: the impression and the fit reaction must have gone together in the first instance to complete the physiological act, and must go together, actual or understood, afterwards. What are these movements? When the carp makes itself acquainted with the bread so as to know it to be good and to seize and swallow it, instead of fleeing from it, there cannot be the least doubt that it performs a number of fine movements of eye and mouth and nose, which are associated with the visual impression, which in their innermost and uppermost cortical registrations become constituent elements of the perception, and which, therefore, when aroused in the innermost afterwards, give to the object its acquired interpretation or meaning—make it practically a new object. It is, in fact, by virtue of these movements that the carp has modified its relations to the object: that this is not the same object to its eye, no longer a vague symbol of danger, but a definite apprehension: an image held, as it were, in most exact and fit muscular grasps, an informed perception. Thus the perception is at bottom a definitely organised excitomotor or reflex act, the motor

element of which is in close relation with the subordinate machinery of general bodily movement and the receptive or so-called perceptive side of it in close relation with the subordinate sensory centres. It is not then in any case the gross movements of approach that are directly represented in, and actuated by, the cortex; if any movements be so actuated, they might be expected rather to be the associated fine movements which have contributed to the intelligent apprehension of the object and are thenceforth constituent elements of the perception.

II.

So much for the physiological aspect of the matter. Looking at it now from the mental side—What is the added mental element when the carp darts forwards to seize the bread? It is, of course, not possible to dive into a carp's mind and to discover what is passing there, but we have clearly the right to say that the act is purposive; and purposive in the sense not of inborn, unconscious design, but of an acquired purpose. That is to say, in other words, that it has the essential constituent elements of a voluntary act—namely, the guidance of appetite or desire by knowledge or reason. The creature knows not that it wills, but it certainly has willed; knows not that it reasons, but certainly has reasoned. Its first and instinctive impulse has been superseded by a voluntary act—blind desire to escape, by informed desire to profit. Plainly we have to do with an undoubted mental act, call it perceptive, rational, voluntary, or what we will; and it is from the multiplication, combination and complication of such simple factors that the mental structure, however complex in the end, is built up. To thoroughly comprehend and explain its nature would be to possess a key to the interpretation of the most complex mental acts.

But there is undoubtedly a vast deal to do, or to undo, before we can see and apprehend the facts just as they are. Endeavour as earnestly as we may, we cannot purge our vision and free our thoughts from prejudice. We are obliged to make use of the language of psychology—most of the terms of which are without clear and exact meaning, and every one of which probably contains and conveys some unwarrantable implication, since it is inspired or infected with the traditional notion of mind as something that has being independent of organisation, whose functions therefore belong to quite a different order from all other natural functions, and require to be studied by a method other than the method of all positive science. The pity of it is that while they stand so

absolutely apart in nature and in the method of study demanded, they actuate every moment so many events of the ordinary world which can only be studied by the common method of positive science! Happy might it have been if, when the scientific study of mind began, a new nomenclature had been invented and afterwards progressively developed as it was needed, so that the study of facts might have gone on and the knowledge of them have been gained simply as it unfolded itself, without hindrance, prejudice or bias from the implications and vaguenesses of a language invented and used to describe the entities of a pure psychology; in which case the science of mind, as studied from without, and the science of mind, as studied from within, might have kept entirely separate and, mutually indifferent, gone placidly their independent ways.[1] No such clean sweep having been made, there is nothing for it but to endeavour to get as clear and distinct ideas of real facts and relations as possible, to describe them in the best terms available, and to leave the fittest terms to survive in the struggle for existence.

From this positive standpoint it will be instructive to consider a little more fully what is the fundamental idea or plan of the mental organisation in the brain. The essential question is not whether mind does this or that, nor whether this or that has mental quality, but what it is which direct and unbiased observation proves the nervous system to do of itself, with or without the accompaniment of consciousness, what such performances actually are and signify, and what is the proper language to use in order to describe them. It is certain that we find in different members of the animal kingdom, either in germ or in actual display, most of those functions, if not every function, which we know as mental in man; certain, again, that we have not the right to describe by different names in him and in them functions essentially the same; and most certain that if the nervous system can perform them of itself in them it can perform them also of itself in him.

When we examine in low organisms the first beginnings of the nervous structure, the development of which in man subserves mind, it is evident that its foundation is the simple mechanism of a reflex act. Two nerves connected by central nerve-cell or nerve-cells serve, the one to receive

[1] All the more to be desiderated, perhaps, since the language of psychology is itself derived from sensible experience; such purely mental functions as reflection, recollection, attention, deliberation, imagination, &c., being denoted by words of entirely physical original.

the impression from without and to convey the motion produced thereby in it to the junction-cell, which is the centre, the other to convey the resulting current from the centre to the outside world through the muscle or muscles to which it is distributed. From these simple factors of ingoing or sensory and outgoing or motor currents are built up by multiplication and complication of nerve-tracks all the complex factors of the highest mental organisation. The simple reflex act may be performed without any consciousness, as we know by positive experience of ourselves, and conclude from our observation of the lowest creatures that possess the first rudiments of a nervous system. Consciousness is not necessary to a purposive reflex act; the proper nervous mechanism is of itself adequate to its accomplishment.

In pondering the nature and meaning of such reflex action, two features of it thus come to claim particular notice: the first, that the afferent or sensory nerve-end is adapted to receive a special kind of impression, making for itself among impressions a selection or classification of them, as we should say if it pleased us to imagine it conscious and to describe its action in the language of psychology; the second, that the ensuing movement has a fit relation to the impression, not being vague, general and uncertain, but definite, special and purposive—not less apt, perhaps even more apt, than if it were called voluntary. The end of the double process is a movement either of attraction or of repulsion: a movement suited either to seize, apprehend or embrace the stimulus which is useful or agreeable to the organism, or to repel or avoid the stimulus which is hurtful or painful to it. Herein we have the fundamental data of all mental function: first, attraction and repulsion, based in the organic life, which in higher developments become appetite and disgust, desire and dislike, love and hate; and secondly, the adaptive reaction, which, being the means through which appetite or desire obtains fulfilment, serves the so-called animal life, and constitutes in its highest developments the basis of the intellectual structure.

Such are the facts; in order to the apprehension of their full meaning they deserve a fuller consideration. It was taken notice of just now that the nerve-ending on the surface of the body responds only to the impression which it is fitted by its nature to receive, and is indifferent to the stimuli which affect other nerve-endings differently constituted: that it virtually analyses impressions and makes a classification of those that are of the same kind. The eye is insensible to sound-waves, the ear insensible to light-

waves, the nose insensible to the stimuli which occasion taste in the tongue, and the mother-sense of touch practically insensible to any of those stimuli which suit its special developments severally; and there are creatures low in the scale of animal existence which have none of the sensibilities of the special senses. Moreover, the nerve-ending may be insensible to its special stimulus because this is either too weak or too sharp to affect it; there are notably sound-waves which one ear, human or animal, can hear but another cannot hear, light-waves which one eye can see but another cannot see, either because the undulations are too slow or too quick to make the fit impressions. It is obvious, then, that the portion of nature to which any creature is sensible, with which alone it is in relation, is but an infinitesimal fraction of the whole; and obvious also that creatures below man in the animal scale, and especially the minute creatures whose instincts and activities stir our surprise and admiration, may well be sensible to degrees and even kinds of impressions of which he is insensible. To every creature the world is so much of the real so-called outer world as it is in relation with, and such in character as its means of relation determine; just that world and no more which it feels and, if so be, thinks.

But that is not the whole of the lesson which it is perhaps right to learn. A further conclusion, not less just if less obvious, is that the so-called outer world, or not-self, as felt or known by the individual or self, is not something distinct from and independent of him. He is a part of it, living in and by and for it, not apart from it; and he plays himself a pernicious trick when he thinks to separate himself from it, to place himself over against it in abrupt antagonism, and to observe it objectively. Every pulsation of life, whether physical or mental, is object *plus* subject, not one nor the other separately, but a resultant; or it is subject as mode of manifestation of the unity of organisation of nature. Imagine a simple reflex act to detach itself from its environment, to deem itself a subject, and to declare its activity to be objective and separate; the very outcome of self, or of nature working through self—that self being nature—to be a not-self. But is not that very much what we do when we make the distinction in the high mental planes of reflex action? It is error, if error it be, which has sprung from the prolific source of our greatest woes — that is to say, from the exaggerated importance and false position assigned to consciousness in mental function; from the consequent transformation of it into a transcendental something in-

habiting metaphysical regions; and from entire failure to observe the actual physical conditions under which it invariably and inevitably arises, waxes, wanes and lapses. An accompaniment of, not working agent in, mental function, arising from incomplete or interrupted union between the self and not-self, and maintained and conditioned by the reflective action of the nervous plexuses of the cerebral cortex, consciousness illusively interprets different brain-acts, or rather the different poles—sensory and motor—of the same brain-act, as self and not-self.

With the special sensory impressions which join to constitute the particular perception, there go along necessarily answering motor effects; discriminations of sight, of sound, of touch, implying the nicest corresponding motor adjustments. Perception is not half the process of a cerebral reflex, as the ordinary way of speaking and thinking of it might imply, but the full reflex. The perception of an object, such as a chair, seems a passive experience, but it is not really so, for it involves and includes fit motor reactions to the impressions: we never could have learnt to know the object except by many motor apprehensions in the past—motor apprehensions of it by the hands and of its image by the eyes. The formed percept, therefore, is compound, just as the apprehension was in formation; it contains the understood motor experiences—that is to say, the anterior cerebral kinesodic or out-tending as well as the posterior cerebral æsthesodic or in-tending, from which *in-tending* and *out-tending* together comes fit *ad-tending* or *attention*. Everywhere fit movement must answer to fit impression. The fullest and most perfect life signifies the greatest number of the fittest movements in answer to the greatest number of the fittest impressions. Many small creatures are admirable in the adaptations of their acts to their impressions, more perfect than man in that respect, but the range of their impressions is very limited and special compared with that wider range which his senses open to him. They are perfect machines for their comparatively low ends, their simple nervous system being wholly appropriated, and, as it were, stereotyped to certain set uses; whereas he is a progressive and perfecting machine, his complex nervous system being plastic to new uses. Latest birth of nature and microcosm of the animal world, he has taken almost entire possession of, and now alone continues in his line, the process of evolution which went on for countless ages in several lines of animals below him until checked by his dominant ascendancy. All the same, he is

infinitely little at his best; he ever lives and moves and has his being in relation to a very small part of nature, and cannot feel, think, or act, has no life or being, apart from that circuit of nature of which he is part, and which, although he enlarges it as he progresses, remains infinitely small. He is on about the same level of ignorance when he knows the constitution of a chemical molecule and the constitution of a solar system, and, perhaps, discovers their constitutions to be essentially one.

III.

That the fit adjustment of movement to impression is the fundamental quality of perfect reflex action is plain and certain; it is not so plain, although it may, I think, be shown to be no less certain, that such fit adjustment is also the fundamental quality of reason or intelligence. To perceive or be sensible of a coexistence or a series of impressions and to determine fit action consciously in relation to them, is intelligence or reason; it is to act with purpose after reflection—that is to say, to distribute the combined æsthesodic impulses along nerve-tracks whose union in function shall effect the desired end. Reason is essentially reflex action: that is the fact which it is important to note and weigh. Differences, of course, there are between an act of reason and a simple reflex act; for, first, reason embodies and expresses more complex adaptation than simple reflex action; and, secondly, it is conscious while the latter may be unconscious.

Are these differences so great as they seem to be: (*a*) as regards consciousness and (*b*) as regards complexity? But little reflection is required to show that consciousness does not make the mighty difference which is commonly supposed; for, while it necessarily attends the formation of an act of reason, it is certainly not necessary to its accomplishment once this has been thoroughly formed. Nothing is more plain than that an act of reason which has been done a thousand times, and thus has become habitual, is performed unconsciously; on the occasion of the fit impression we reach the conclusion instantly, without being aware of the steps of the process which we went through deliberately when we performed it for the first time; a set nervous arrangement has been formed, and use has made that an easy instinct which was conscious labour at first. This degree of instinctive perfection has been reached by a great number of the habitual acts of reason which we perform daily; in respect of them we are on a level with the minute creatures whose quick instincts

stir our surprise and admiration — formed or completed machines set to certain definite uses; consciousness having lapsed with the completeness of the formation. The proper nervous mechanism, when it has been suitably organised by fit use, is adequate to the accomplishment, without consciousness, of acts of reason (or what would be called reason were they conscious) even when these are purposive acts of a complex character. Mind can do its work without knowing it: predesigning consciousness is not necessary to the accomplishment of design. Consciousness when it is present is the light which lightens the process, not the agent in its accomplishment. Furthermore, another weighty reflection which we ought to take serious account of is, that although consciousness necessarily attends the formation of an act of reason, it does not in that case precede or dictate it; actually it only accompanies or immediately follows the perfecting act. It is a signal illusion to suppose, as the wont is, that consciousness can direct itself, or be directed, methodically to this or that chamber of the mind, seek for and find what is wanted, and thereupon summon it forth and use it. When mental process of that kind takes place in such functions as recollection, imagination and reflection, it is not consciousness which determines and effects it; we are never conscious of the thing until the thing is; consciousness does not go before the event, it only comes into being with its accomplishment. Reason is implicit in the process before it is explicit in the knowledge. We learn to perform reason, just as we learn to perform a complex act, by doing it, and, as with movement, perfect it by practice; and always the reason is in process of function before consciousness is developed, as it is implicit after consciousness has lapsed.

So much for one great difference between reason and reflex action: the other is the much greater complexity of the intelligent event. In the fit responses to manifold impression and their various relations which take place in a rapid act of reason there is necessarily more involved and more to be unfolded than in a simple reflex act. At the outset it is obvious that there are no actual answering movements. Necessary in the first instance to the development of reason, the actual movements are not necessary afterwards to its function; they enter into it as motor *subauditions* (*subaudio*), so to speak; their fit registrations or representations in the supreme cortical tracks of the brain suffice. Morecver, there are not actual impressions, for here also it appears, when we consider the matter, that we deal with representations of concrete experiences, not with full and exact reproductions of

them. The impressions, simultaneous and sequent, and the answering motor effects are not in fact concrete experiences, but are representative of concrete experiences—are general or abstract, so to speak; they are signs used to represent or mean concrete realities. It is the reflexes of such signs that are performed in reasoning. Even when the reflex is excited by an impression which is actually made on sense, the impression is a very partial affair. When we think of or act in relation to some known object which is present to sense—an object, that is, of which we have gained an idea or apprehension by experience—we neither have nor require all the different sensory experiences which it is capable of producing in us, which we might, however, obtain from it if we tried, and which were required at first to gain an adequate perception or apprehension of it; one instructed sensation of it suffices as sign or symbol of the rest that are understood. For example, on seeing an orange and thinking about it we do not go through all the concrete experiences of sense which we can obtain from it, if necessary—do not touch, taste, smell it, as well as see it, in order to know that it is an orange, as we were obliged to do at first in order to apprehend it truly. If it were necessary to do that with every object on every occasion of perceiving it, life would be filled up with the practice of a few perceptions and of the first steps of reason; nor would the structure of the brain, extremely fine and intricate and complex as it is, be equal probably to the necessary demand on its physical resources to register separately the innumerable concrete experiences of the same object. We abstract from the concrete details of a class of particular experiences that which they have essentially in common, and use the visual or other sensory impression of the object as sign or representative thereof, knowing well what we shall find beneath it if we go to the test of actual experience. The sign acts like the name of the object when this is not present to sense, serving to excite the thought of it, and, therefore, of the possible sensory and motor experiences from it.

As it is with sensory impressions, so likewise is it with their associated movements. We do not on each occasion make the concrete details of movement which would be the fit and necessary responses to the concrete details of the impression; we abstract that which they have essentially in common, and use the motor registration as sign or representative of them in our thinking, knowing well what it means in value when put to the test of actual experience. For example, when we apprehend an orange by

grasping it in the hand, or by grasping its image, so to speak, by the proper movements of the mechanism of the eye, we have not intuitions of the associations and degrees of contractions of the different muscles which are required for the respective performances—the movements, now quick and easy, which we had to perform tentatively and associate gradually by practice in the first instance; they have been so combined or conglutinated in the general purposive act that they constitute a motor complex, and are silently understood; and therefore the conception of the aim or purpose suffices, as it were a sort of abstract representation or general sign, to set them going in proper concurrence and sequence. We respond by motor signs or symbols to sensory signs or symbols, and so obtain the vast extension of reasoning power which is our human characteristic and privilege. The act of reason is still at bottom, however, the fit reflex at a higher remove, the ideal performance of it; and the logical conclusion in any case, given the proper premises, is just as necessary, as mechanically inevitable, as the right reflex act to a particular impression. If anyone is asked to assent to the general proposition that all men are mortal, he does not need to think of any particular man, the word man sufficing as a representative sign of all particular men; nor does he need to think of a particular process of mortality, the word mortality sufficing as a sign of all such particular processes; but so soon as he apprehends the meaning of the proposition he is compelled, if he has a sound understanding, to assent to it; he can no more help such assent than he can help winking when his eyeball is touched. If he is in earnest to realise distinctly the meaning of the general proposition, to have a clear and definite idea of what the actual fact is which underlies the general statement, he must come down from signs and generals to particulars, and form an image of a concrete man and of a concrete process of mortality — must descend from the higher planes of reflex action to the basal experience of concrete reflex action. It is a misfortune for common thought, but the privilege of metaphysical thought, to have no basis in sensible experience, and to be untranslatable into such experience.

IV.

Without doubt, then, the plan of the entire nervous system is the nervous mechanism of a reflex act, and the development of such system, even in its highest parts, the complication of such mechanism. That complication takes

the form of the association of several ingoing currents from different sensory endings by means of central nerve-cells, and the thence distribution of them as outgoing currents along several tracks or lines of conduction; and it is obvious that in the junctions of central cells, and in the multiplication of their connecting fibres on the same level, there are the means of many fit distributions and of different combinations of distributions. There is the further complication of different levels by the superposition of areas of higher level of reflex action with which areas at a lower level are connected, and in the more abstract and complex superordinate function of which their functions are represented; so that from the higher areas pregnant impulses may pass to different subordinate centres and be suitably distributed. The higher in the animal scale an organism, the greater is the subordination of parts generally, and the more subordinated specially are the lower centres of reflex function to the higher centres: the spinal centres of the decapitated man can do little or nothing, but the spinal centres of the decapitated frog are nowise so impotent, for they have not lost their independence and merged their authority in the constitution of superior centres from which thenceforth their orders come. In effect this serial structure of the nervous system is a fair parallel on the physical side to the ascending process of mental development in which from particular ideas are formed general ideas, from these still more general ideas, and from these in turn more and more abstract ideas. Going back for a moment in thought to the former simple illustration of the carp and its successful education to new conduct by the transmission of the ingoing currents along other tracks and perhaps a higher level of reflection, and thus getting mental hold of what takes place in a low-organised and comparatively simple nervous system, we may with the more ease conceive the extension of the same principle of construction and function through the complex structure of the highest nervous system with its larger scale of subordination and co-ordination of parts.

In the end, then, it comes to this: that the difference between the simple nervous structure of the lowest creature which possesses one and the complex nervous system of man is the measure of the difference between the simple and general reflex acts of which it is capable and the multitude of complex and special relations with external nature of which he is capable. To the progressive increase and specialisation of such relations through the animal kingdom, the progressive development of the nervous system

has answered; its structure incorporates or capitalises the accumulated experience of the race in its progressive adjustments to its surroundings; and it accordingly displays explicitly in function, when it is active, that which is contained implicitly in it. What we have to realise, then, is: that in the details of special structure and form wherein the human organism differs from and surpasses the nearest related animal organism, are embodied those special human qualities which difference man from, and constitute his superiority to, his next-of-kin in the animal world; that his nervous system, like every other nervous system, is the necessary formal and structural outcome of its historical development by minute increments through the ages, the living material embodiment of its past and present relations with its medium; and that the organised patterns or forms, inherited and acquired, of its cerebral cortical tracts are the fit or in-formed substrata of mental functions which, representing an immense storehouse of energy adapted to its relations with the medium or environment, discharge or expend what was embodied in structure. The storehouse of what sort of energy in its highest layers of organisation? Obviously of so many purposes or ends which, mentally presented, are thoughts, and which, bodily effected, are adjustments or fit acts.

So much, then, concerning the fundamental plan of the grey structure of the brain: a continuation of the grey substance of the spinal cord with its anterior or motor and posterior or sensory columns, it continues in some sort its plan of structure. But the plan has been so much modified by the disposition and packing of parts necessitated by the form of the brain that it is not easily traced in the higher centres; for parts which in the spinal cord are comparatively simple and have definite and easily recognised relative positions, have undergone such disseverments and unions, such displacements and twistings, in the complex structure of the convoluted brain that it is not possible yet to say which is which and what are their respective functions. All vertebrates notably exhibit a distinct tendency to body-segmentation—that is, to a repetition of similar structures from head to tail; indeed, the facts of comparative anatomy are believed to warrant the conclusion that the vertebrate ancestor was constructed of a series of similar segments, each of which had its afferent nerves, its central plexus, and its efferent nerves. In the lowest vertebrates the parts are probably of the same value, but in the highest vertebrates those placed at the anterior extremity of the body have

undergone specialisations into special senses, and much of the length of space which would have been necessary had they followed one another in line has been saved by the twisting over of them into the globular form of the brain.[1] The result has been such complicated mixing and displacement of parts as to render definite localisations of the functions of the cerebral cortex a most difficult business. Something has been done, however, by the three methods of inquiry which have been patiently pursued; namely, the comparison of the brains of animals endowed with different degrees of motor and sensory development, the experimental stimulation and destruction of definite portions of the cortex, and the clinical comparison of the observed symptoms of local cerebral disease with observations of the nature and extent of it after death. Mainly by help of the two last methods of inquiry it has now become a generally accepted doctrine that there is a motor and a sensory region of the cortex, that the motor zone of it occupies nearly the middle portion of the external surface of each hemisphere, and that this zone is not functionally homogeneous, but consists of parts which represent and subserve different bodily movements. The regions in front of and behind this motor zone, when stimulated experimentally or irritated by disease or injury, have no effects upon movement; but there is good reason to believe that in the posterior regions are contained the so-called centres of the special senses, although their respective localisation is still a matter of uncertainty and dispute. So much is broadly certain: that the sensory and motor regions of the spinal cord are represented by their continuations in the cerebral cortex; that these representative motor areas have definite connexions with the lower motor centres, provoking, when stimulated, definite movements in definite parts of the body; and that its sensory areas have similarly definite connexions with the lower sensory centres, causing, when destroyed, definite losses of perception.

V.

Accepting these anatomical data, the question is—What actual relation of function the definite motor areas of the

[1] "One may conjure up a ludicrous picture of what a man's head would be like were space no object, and all the secondary centres of the cortex arranged, as in the alligator, in rectilinear series." *The Plan of the Central Nervous System*, by Alexander Hill, M.D.; also Abstracts of Lectures on the Brain-Mechanism of Sight and Smell, in *British Medical Journal*, March, 1886.

cortex have to the classes of movements which take place in consequence of their stimulation? I have already argued that they are not the seats of concrete experiences but rather of abstracts or representatives of experiences, of experiences at higher removes; abstracts which, like essences, contain in concentrated form and small compass the essentials of concrete experience. They are the seat of general or abstract movements, so to speak, as their associated sensory areas are of abstract sensations, and they function through fit signs or representations of sensory and motor experiences; they contain the mental not the actual motor mechanism; we think by them, as we use symbols in algebra, without calling for their value in concrete coin of experience. Their reflexes are our ideas, and the plexuses of them the organic web of our thoughts.

In speaking thus of abstract movements and abstract sensations, it is not, of course, intended that there is any such separate reality or entity as an abstract sensation or an abstract movement. That which is abstract is not really sensation or movement, the actual sensation or movement being always concrete; the abstraction is a mental abstraction, it is the abstraction from the particular realities of something which is common to every particular perception and movement of a class and its registration, or, so to speak, its denotation in fit nerve-structure. That which is permanent and real is the pattern or form of the special nervous arrangement at a higher level which subserves the common or general experience. Sensation and movement have been pre-essential to its formation; it is now self-existent and self-sufficing, *sui generis*, the current of its reflex resembling in nature the sensori-motor and the primary reflex currents, but being special. There is no reason to believe that any sensory nerve-fibres go directly to the cerebral cortex, or that any motor fibres proceed directly from it to their destination, without intermediate connexions with subordinate planes or areas of grey matter; the cortical representation is not direct but indirect representation; when, therefore, outgoing impulses pass from the motor areas of the cortex to the muscles and issue in movements, they are not directly motor but act through intermediate agency. The centres are not motor centres, but centres of motor abstracts. When they are active without translation of their activity into movement through the medium of the direct motor agents, what are such abstract activities but functions which we know as mental?

An idea is at bottom, then, a cortical reflex, and the word

or name is something by which we arbitrarily denote or mark it. But what is the word or name essentially? Neither more nor less than special, fine and complex movement arbitrarily selected or accidentally hit upon in the first instance, of which, by reason of its relation to inspiration and expiration, audibleness or sound is an incident. Any special movement which was uniformly used and could be recognised would serve the purpose were no sound to accompany it. The name of a perception or thought is something different from the perception or the thought itself, which may notably exist before it has got a name, and after it has lost it, and which has as many different names in as many different languages. The name is, in truth, a different perception and different movement, a different sensory and different motor complex; a separate reflex which, having been arbitrarily selected and uniformly used as a mark of the thought, is inseparably connected with it and acts as sign or signal to excite it, and in turn to be excited by it. It is not that we define an idea by naming it, as seems often to be thought; too frequently we create a prolific source of error and fallacy by naming it and using its name in thought and reasoning before it is clearly and distinctly defined: [1] we define it radically by realising the special impressions and the special answering movements which have gone to its formation—by perfecting its proper reflex acts of apprehension. Having thus differenced it from other percepts, we give it an arbitrary name, mark it, that is, by a distinctive sign, which may stand for it ever afterwards and be used instead of it. But the structural constitution of a name, uttered or written, is strictly comparable to that of any other highly-specialised movement; it is not something of a different kind, but of the same kind—a special and complex instance of reflex action. Our reasonings by means of words are cerebral reflexes, reflexes at high removes which have their substantial meanings in the reflexes which they denote and excite.

Not that we utter the words or need to utter them actually

[1] Notably by giving the same name to things which, not being adequately defined, are not really the same but different, and so reasoning of them as if they were the same; again, by giving different names to things which, being defined by superficial features only, and not truly apprehended, are not essentially different, and so reasoning of them as if they were different; and again, by giving names to abstractions and then making things of names. To have clear and distinct ideas and exact denotations of them is the essential principle of sound reasoning; and in order that ideas may be clear and distinct, is it not necessary that they be based in sensible experience?

when we thus reason. The conception of a word is something different from the motor expression of it; if it were not, its conception would be its motor expression. Moreover, what we observe in examples of loss and disorder of speech proves that the articulating movements of words are not damaged or destroyed necessarily by injury or disease which damages or destroys the functions of the word-centres in the cerebral cortex. A person may lose the power to conceive the word, become utterly speechless in that respect of it, while retaining the power to utter its movements should they be otherwise excited: the psychomotor incompetence is not necessarily motor incompetence. The nervous mechanisms of the two functions must be different, for it is always a sound physiological inference that a difference of function means difference of organ or structure. When it is said, then, that we think by means of words, what is meant is that we think by means of their intuitions without making the requisite movements to utter them, not uttering them at all perhaps, or only making a kind of internal still utterance of them; and that still process presumably is the conceptional activity of the highest reflexes of the cortex without the articulating activity of the subordinate machinery of utterance. In which relation it is interesting to take notice how necessary to a person of uncultivated or of somewhat dull intelligence it oftentimes is to actually utter the word to himself aloud or in a whisper in order to get his conception; he cannot think by means of its cerebral notation without bringing to his aid the concrete interpretation, cannot perform abstract thought, cannot realise what the cheque is until he sees or feels the money which it represents. Everybody may discover for himself how helpful to fix attention, when it is prone to wander, the still utterance of the word sometimes is: incidental evidence how necessary for thought it is, first or last, to anchor in the outer world.

Now, what I desire to indicate in this connexion is, that as it is with words, so it is probably with all other highly specialised movements—with all the minute muscular tensions and fine movements of eye, mouth, nose, face and body generally, that go alike to the outward expression and internal constitution of moods and thoughts. They have the same constitution and the same signification as words; but we lose sight of their nature and essential operation in the mental or supreme cortical region because they have no names, no means of designation, and because, not considering sufficiently what is the real nature and significance of words or names, we attribute a special dignity and function

to their movements. Nevertheless, the mute language of expression is sometimes more eloquent than the spoken word; a particular muscular tension of features, a more distinct and efficient sign of a particular mood or thought than the vocal expression of it would be. Like words, these and all other specialised movements have probably their cortical representations or notations; they are implicitly essential elements of thought, and we habitually think by them without explicitly making them. Moreover, with them as with words, it does not fail sometimes to happen that we can perform them when we cannot think them—when the cortical substrata of the conceptions or intuitions of them are presumably not in function. For, in such case of impotence of intuition, what may be supposed to befall is the damage or destruction of the supreme cortical reflex which serves as the symbol or notation of the special act and thus marks its end or aim. There is not then the capability of thinking the act; the intuition of its purpose is no longer possible. In order to do a thing voluntarily, it is indispensable to know beforehand what it is we are going to do and how to do it; in other words, a conception of the end and means is prerequisite to its exact accomplishment. Once this conception of the design or purpose has been obtained by perfecting practice of the means, we can of course entertain the conception without going on to accomplish it actually; if we could not, the conception would always be the execution also. It seems, in fact, a legitimate psychological inference that there is a supreme cortical region of the brain, superordinate to direct motor areas, which is the seat of the representations or notations of specialised movements, and which ministers to the manifold conceptions and wills of a sound and well constituted mind.[1]

If the foregoing interpretation of things be correct, it is evidently unreasonable to suppose that any physical stimulus

[1] This was what I endeavoured more than twenty years ago to set forth at length in a special chapter, entitled "Motor Nervous Centres; Actuation or Effection," in the first edition of my *Physiology and Pathology of Mind* (1867). At that time it was the accepted doctrine that the cerebral cortex was insensible to stimulation, and had nothing to do with sensation and movement; and the only notice which, so far as I know, the chapter received was contemptuous dismissal by a reviewer as inconsistent with that well-established physiological truth: Since then it has been shown by more exact experiments that the cerebral cortex has a good deal to do with movements, and the tendency now perhaps is to make too definite localisations of so-called "motor centres," and to attribute to them too direct a motor agency. Anyhow, there is a mental side to their functions which requires consideration.

which the physiological experimenter can use will be sufficiently fine in its nature and exact in its application to be limited to the excitation only of the intuition of the specialised movement. The notion of so exact a success is almost as much out of keeping as the notion of measuring a nerve-cell with a common pair of compasses. The most nicely-applied and carefully-guarded electric stimulus in such case must inevitably work beyond its desired limits and affect neighbouring structures; and it is natural then to suppose that the structure most sure to be affected by the diffused stimulus will be the structure most intimately connected with it physiologically—that is to say, the subordinate, if not sub-cortical, actual motor area. That may well be a sufficient reason why the physiological experimenter cannot stimulate a thought or volition only, and why the attempt to do so must almost certainly be the excitation of a crude movement. Moreover, if he did succeed in exciting a thought or volition only in another brain, how could he ever know it? As the movement is the only way by which the thought or volition can discover itself to him, it is plain that without such discovery of itself it would be all one to him as if it were not. All the experiments in the world on animals must have failed for ever to make known the speech-centre in the human convolution, since its functions are special to man; that discovery was made, as other localisations can only be made in him, by comparing the functional disorders observed during life with the exact nature and place of the damage discovered after death; and it may well be that those portions of the first, second and third frontal convolutions in front of the recognised motor zone, which yield no motor effects when stimulated in animals, may yet have to do with the exceeding fine and almost imperceptible muscular tensions or movements that go along with their highest functions of attention and expression, and with such associated mental operations as they are capable of.[1] What

[1] In man they may, of course, well have more special and complex functions than the lower animals are capable of, just as the foot of the third frontal convolution in him subserves movements of which they are incapable—namely, articulate speech. M. Charcot attaches the highest probability to the inference that the centre which presides over writing is situate at the foot of the second frontal convolution. "As for the region of the cortex," he says, "lesion of which produces deafness, that, certainly, as Nothnagel held as early as 1879, occupies the first frontal convolution." If that be so, is it not probable that it is the efferent or motor terminal of the cortical reflex, rather than the afferent or sensory terminal, which is the part damaged and causes the deafness? To sub-

we do in the way of communication with one another by means of speech and writing mainly, they do by means of a subtilty and variety of muscular expression which we cannot apprehend, but which makes some of them, notably the dog, so keen to perceive the mute muscular expressions of our moods. As sight and hearing are specialisations of the primal sense of touch, so writing, speaking and all the silent language of expression are specialisations of the general function of movement; and as writing and speaking have their special cortical seats, so, without doubt, have the fine mute movements of thought and expression their proper cortical representations: all three classes of movements situate probably in the near prefrontal neighbourhood of each other.

From all that has been said, then, it would seem very probable, if not certain, that no part of the so-called motor region of the cortex really is directly motor, but that its whole represents the specialised movements at higher removes, and that such abstracts of movements or motor abstracts are the out-tending or efferent aspects of the cortical reflexes which all our thoughts are. In mental apprehension is contained the understood fit responsive movement to fit impression which is expressed actually in bodily apprehension. That there are any motor centres and thought-centres side by side on the same level in the cortex—motor areas, that is to say, which do not take effect in movement indirectly through lower motor areas—is improbable, albeit not entirely beyond question in the present state of knowledge. To suppose such a direct motor centre on the same level with the thought-centres, would be to suppose no higher level for it—that it had not, nor needed, the cerebral representations at a higher remove which other motor centres need and have; and in that case it might be a question whether it could be made use of in thought, since its function would not be function in the mental plane only but presumably actual movement.

VI.

It would be interesting to pursue this line of speculative inquiry through the fields of mental pathology, since the facts to be observed there could not fail to suggest instructive reflections, but I limit myself now to the briefest

stitute for the conception of definite centres the conception of cortical reflexes—that is what it seems probable we have to do, in order rightly to interpret the results of experiments.

indication of their pregnant significance. The firm grasp of the nature of perception as a reflex of the proper track in the cortex will help somewhat to the understanding of the mechanism of hallucination. Take, for example, hallucinations of hearing, which are so common, persistent and teasing or tormenting features of certain forms of mental disorder. In the hallucination, as in the perception, there is an understood motor factor: as we cannot discriminate a sound until we have attuned the auditory muscles to its exact note, so we cannot have a hallucination without the co-operation of its fit motor *subaudition*. It is well known how attention to a faint sound intensifies hearing, and how attentive listening to a fancied sound will, if intense enough, become actual hearing. Listening attention is, in fact, a making ready to hear, a waiting readiness; it is the putting into a certain degree of action of the same nervous track which, when put into a greater degree of action, is hearing. With sense, as with thought, the secret of persuasion is to say what a person is hoping and waiting to hear. Let the internal tension reach a certain height of functional activity, whether from the impact of the fit external impression, or from some efficient internal cause without any external impression, and the proper sound is inevitable. We may discover it in the latter case to be hallucination by other evidence, but in itself it is distinct, positive, certain. So likewise is it with vision: we cannot recognise an object by sight without making the motor apprehensions proper to grasp its image; until we have succeeded in doing that, the unknown object may be a bush, a rock, a sheep or a shadow, we cannot tell which; and we may even see an object when it is not there at all if we have somewhat made the fit motor apprehensions. It matters not how the tract of the reflex be put into operation, whether at its æsthesodic or at its kinesodic terminal, if only it be put into adequate operation.

Reflect upon the not uncommon case of a mentally afflicted person who is tormented by the frequent or almost constant obtrusion of an offensive thought, blasphemous or obscene: it comes into his mind against his will, he knows not how or why, takes almost exclusive possession of his consciousness, cannot be banished from it by his most earnest endeavours, drives him into agonies of despair. Have we not here the separate and persistent activity of a special brain-track comparable to the sort of abnormal nervous activity which is the cause of a recurring muscular spasm—a disordered cortical reflex of like nature to a spasmodic reflex movement? Thus far there is no hallucination; and

although the sufferer may, if he be superstitious-minded, come to the conviction that the wicked thought is inspired by Satan, who has got possession of him, he does not actually hear it suggested to him. Even if he think it the work of some earthly enemy who is persecuting him malignantly in a mysterious way, he is aware that he hears no actual voice; that it is an 'internal voice,' not heard from without but within his head, perfectly distinct although inaudible to his ears.[1] In this case we may suppose the morbid thought-reflex to have excited to associated activity the cortical reflex of the name, and the corresponding morbid activity of this last thus to become the occasion of the strong impression of an internal voice. A step further and he is tormented with the most urgent impulse to utter the offensive word aloud or in a whisper, is in the agitation of continual struggles to prevent such utterance, fears that he may have uttered it unawares, and is horribly afraid that the impulse will, as it does sometimes, prove too strong for him to withstand effectually: the cortical word-reflex is pressing hard to its natural outcome in the actual utterance of the spoken word through its appropriate sub-cortical motor mechanism. Not always, however, in such cases is there the urgent tendency to utter the word, or what tendency there is may be easily repressed; instead of the pressure to the motor outlet, the morbid activity of the cortical reflex may affect chiefly the sensory terminal, when the result is actual hallucination of hearing. Then he has not the least doubt that he hears the word actually spoken to him. The hallucination appears to be the counterpart on the sensory side of the utterance of the word on the motor side; in both cases the morbid energy has overflowed its internal cortical bounds, and pressed upon the subordinate parts so as to be or seem external.

Further illustration of and insight into the probable nature of the functions of the cortex might without doubt be obtained from a close observation of other phenomena of

[1] Of the same character were the 'locutions' by which saints and sinners have held communication with the supernatural. Describing how the speech of an angel flows into a man's thought by an internal way into his organ of hearing, and thus acts upon it from within, being *sonorous* because it affects the organ of hearing, Swedenborg says: "That the speech of an angel flows down from within even into the ears, was proved to me by its effect upon the tongue, which it also flows into and excites a slight vibration, but this vibration is not a local motion such as takes place when the sound of speech is articulated in words".—*Heaven and Hell.*

mental disorder. Well deserving consideration in this relation are the features of that derangement which, beginning as simple mental excitement, mounts in *crescendo* scale to an acute mania, and ends in utterly incoherent delirium. In order best to appreciate their nature, the motor side of them should receive particular attention. Before a person falls into acute mania there is commonly notable a precursory stage in which he is unduly excited and elated in thought, feeling and conduct, self-confident, happy, talkative and busily active—behaving, in fact, very much like one who has taken too much wine or other alcoholic stimulant—but not deluded nor incoherent. The forms of his thoughts—their proper cortical patterns—are maintained, and their associations take place normally, but with abnormal ease and rapidity; the cortical reflexes being in a state of undue excitement, he thinks and feels, just as he moves, with an extraordinary energy, alacrity and ease. All that he has visibly lost are the most refined social inhibitions, which go along with a more quiet and inter-restrained function of the supreme centres and with a corresponding self-restraint; he is insensible to the most delicate shades of moral feeling and less observant of the nicer social proprieties than when he was his true self, is more self-regarding and self-assertive, has his real *Ego* spoilt to that extent. From this stage he passes after a while into a state of ordinary acute mania, when he is something else than the hard, unrefined, brilliantly accentuated copy of himself. The normal forms and associations of his thoughts are now no longer maintained; irregular combinations and associations of tracks take place, for the most part temporarily formed and unformed, but some of them perhaps so lasting as to keep up a predominant activity and to give rise to more or less system amidst the general incoherence and transient illusions and delusions; while his disorderly movements, whether aimless and fantastic, as some of them are, or as exhibited in his turbulent and disorderly conduct, answer to the internal state of mental commotion. All this while, be it noted, consciousness and the fair semblance of voluntary action are maintained. Nobody could possibly have a greater certitude than he has that he is acting with perfect freedom of will; all that he does is wrong, and some of it alarming, but he knows what he is doing, and is vastly pleased with himself the while and with the consternation which he creates; his movements are not convulsive, they have the air and form of voluntary acts. Some evidence of method is manifest in his mania and in his conduct, and he may even control himself

for a short time if he pleases, although his exuberant energy soon gets the better of him; for he has lost the quiet strength of order and constructive doing, and displays the turbulent activity of disorder and undoing. It is not the finest social inhibitions only that are gone now, as in the beginning, but the social order of thought, feeling and conduct: he has not lost consciousness of his surroundings, but social feeling and apprehension of them, being entirely out of touch with them, a discord in the social organisation, a law unto himself in lawless behaviour. Necessarily the social nature in him, implicit in his finest mental organisation, has been shattered by the disintegration which the functional integration of his supreme nerve-centres has undergone: an example of the regressive undoing in the individual of the latest and least stable gains of the progressive development of the kind.

Going a step farther in observation of the features of degeneration of function along this line, we are confronted with a form of acute mania in which the mental disorder is so intense, so active, so incoherent, as to merge into actual delirium, and which is known, therefore, as acute delirious mania. There is no system now in the frenzy or in the conduct which are both utterly incoherent and anarchic. All the normal forms or patterns of the combinations of cortical tracks have been broken up, and the combinations of them which take place are partial, tangled, disorderly, fugitive; wherefore there is no show of system in the delirium, and the raver seems unconscious of his surroundings, or at any rate is not conscious of them in their true character so as to make the least intelligent response to them; he is scarce capable of momentary attention or of definite delusion. The movements, like the thoughts, are aimless and confused; for the most part there is purposeless and unintelligent resistance to everything that is done for him, and equally purposeless and unintelligent struggles to do he knows not what; he is urged by irresistible impulses to act, without any consistent design in his acts, which evince the fragments only of design. Nevertheless, the movements are not truly convulsive; they have the voluntary forms in disconnected parcels or sections, without the co-ordination in gross of proper voluntary action: the meaningless phrases which he iterates, the howlings, the jumpings, the grimacings, the gnashing of his teeth, the disjointed struggles, which he perpetually repeats in a monotonous and quasi-mechanical fashion, evince the remnants of voluntary form, although entirely beyond voluntary control. In short, it is not the direct motor mechanism which is primarily at fault, I believe,

but the psychomotor mechanism; there is presumably a morbid condition of things in its motor areas which, if it occurred in lower motor areas, would be the conditions of actual convulsions; all the more probably since when matters go from bad to worse the frenzy ends sometimes in general epileptiform convulsions and subsequent coma. We may understand, then, how it is that such a one sometimes looks as if he knew all the while what he was doing and was instigated by a spirit of perverseness, while at the same time he is demonstrably insusceptible to rational influence and incapable of self-control. What moves him is probably a vague, vast and horrible, internal turmoil of distress, unrealisable by sane feeling as it is incommunicable by ordinary language, out of which emerge in ever-changing confusion formless apprehensions and fearful hallucinations. To an insane as to a sane person the external world which he perceives and reacts to is the internal world which he feels and thinks. The voluntary semblance of his involuntary acts I ascribe to the abstract or representative nature of the psychomotor parts affected. The essential contents of the motor abstracts, now incapable of due association or communion among themselves, are displayed in their disconnected discharges on the lower motor mechanism; in such explosive discharges they undergo decomposition, as it were, giving out explicitly in psychomotor convulsions what they contain implicitly in structure.

Pyschomotor phenomena of a like convulsive kind testifying to a similar pathological condition of things are met with in some cases of chorea, where they have a very distinct and instructive character, while all degrees and varieties of them are presented by the vagaries of hysteria. These vagaries are notorious: sensibility lost in parts of the body at one time and in a little while restored; paralysis or spasms of muscles where a short time before was perfect movement, and where in a short time there may be perfect movement again; outbursts of emotional agitation expressed now in floods of tears, and now in convulsive laughter; perverse or even vicious conduct pursued with seeming pleasure to the discomfort of self and the affliction of others, which may nevertheless be checked suddenly by the operation of a powerful moral impression;—all these betray an instability of nerve-centres, which means a want of compact intercommunion and renders them apt to independence and inconstancy of functions. But what I wish to bring into particular notice here is the voluntary form kept up in movements, whether partial or more or

less general, which look convulsive; for a hysterical person who seems to be involved in the turmoil of general epileptiform convulsions will grab, and grasp, and strike, and push, and otherwise act in a way which betrays remains and degrees of method in their violence, and is inconsistent with true epileptic unconsciousness; while another will keep up the machine-like repetition of a particular aimless movement of face, body or limb with wearisome monotone for an indefinite length of time. In the former case, the psychomotor tracks generally are in a state of disordered activity; in the latter case, certain disordered tracks seem to have got into a state of exorbitant activity, while the rest are practically well nigh paralysed. With this tendency to exclusive action goes an excessive sensibility to the causes suited to put the special tracks in action, so that it is a continual marvel, in spite of continual experience, how acute the hysterical persons are to perceive and use the occasions of their exercise, and what adepts at simulation they become without knowing it; they have the show of designedly simulating when it is really only a part of themselves, not the whole self, which is in morbidly exaggerated function and playing aptly to the occasion.

Whatever name it shall be thought best eventually to give to these seemingly psychomotor disorders, it is practically as a study of convulsions that they may be dealt with. Beginning at the bottom, they are simply reflex spasms or convulsions, partial, or more or less general, marking disorder of the primary or spinal areas of grey matter; the simple organisation displaying the simplest and most general phenomena of functional disorganisation. Next in ascent, they are general convulsions of the whole muscular system, such as we see in epilepsy, indicating the implication, first or last, of the whole secondary mechanism of reflex action, for which reason, although general, they are more combined than primary convulsions, and have more the air of a terrible exaggeration of the forms of natural movements; the more complex and special organisation displaying more complex and special phenomena of disorganisation. Lastly, they are convulsions in which the convulsive element merges into the semblance of exaggerated and fragmentary voluntaryism, indicating disorder of the supreme cortical mechanism, and varying in degree from the hardly appreciable involuntaryism of some forms of hysteria, in which little will is lost, to the extreme involuntaryism of acute delirious mania in which almost all evidence of will is gone; the most complex and special organisation, which is the least stable and most modi-

fiable, yielding the most complex and special phenomena of disorder. The supreme unity of will is lost, not because the supreme layer of mental organisation is paralysed and altogether functionless, but because the federal union or integration of parts in it has been destroyed, and, instead of communion or confederation of function, disorderly, dislocated, literally dissolute functions are displayed—the wrecked factors of lapsed will.

As it was, then, with the sound nervous system, so is it with the unsound nervous system; as it can do complex work of the mental sort without help or accompaniment of will or consciousness, so it can accomplish broken or disordered purposes when consciousness and will are not only powerless to prevent disorder but powerless to hinder themselves from being enthralled in obsequious conformity of disorder. In neither case are consciousness and will the actual agents; they are derivative, not original, exponents or indicators of what is being done, not the doers of it; and while the nervous system can work without them, in no case can they exist without its work, of which, indeed, at best they are only imperfect indicators. To leave the original out of account, and to take information only from the revelations of the derivative, is a strange way of aspiring to lay deep and fast the foundations of psychology: "C'est vouloir pousser le bateau dans lequel on est sans rien toucher au dehors".

II.—LOTZE'S MORAL IDEALISM.

By G. Santayana.

"Between the demands of our emotional nature and the results of human science there is an ancient ever-raging strife." This first sentence of the *Microcosmus* suggests the problem that Lotze's entire philosophy is intended to solve. Whatever value his incidental contributions to logic and psychology may have, his answer to this moral question is doubtless the most important and interesting part of his system. It is that which led to the system in Lotze's own mind, and that which will most recommend his system to others.

That this conflict betweeen feeling and knowledge is only apparent is Lotze's first postulate. The argument is offered as evidence that the postulate is legitimate. Lotze does not sum up the results of science and say: 'This is the truth; let us see what comfort we can take in it'. Nor does he sum up the demands of our imagination and say: 'This is the ideal: let us see in how far the reality fulfils it'. That might be the method of one to whom the final reconciliation of feeling and experience was not an axiom. Lotze does not ask to what extent this reconciliation is possible; he assumes it to be complete, and then begins his investigations in the hope of finding his assumption corroborated. A consequence of this assumption is that he never leaves the demands of sentiment out of view when he formulates natural laws, nor natural laws when he formulates the demands of sentiment. Hence a certain lack of boldness in the general effect of his system; both the dogmas of experience and the claims of aspiration are minimised by constant comparison. This mutual control is not regarded by Lotze as an external check to the expression of either impulse; it only prevents the impulses overreaching themselves. For we begin always with the axiom that the reality must satisfy our moral needs. Any demand that things cannot satisfy is at once proved to be no genuine moral demand, but an exaggeration of sentimentality. And any scientific hypothesis that offends our deeper instincts is *ipso facto* disproved, and classed among those materialistic theories that far outrun possible experience. Evidently

such a method of mutual correction is sound only if the axiom on which it rests is true; if, haply, the laws of nature were irreconcilable with our emotional demands, this method would lead to misrepresentation of both. Nor does Lotze wholly escape this danger; yet his characteristic caution and his intimate acquaintance with several branches of natural science keep him comparatively free from the defects to which his method is exposed.

Lotze's system was practically formed as early as 1840: we need not be surprised if the concessions made to science seem to us less ample than they seemed to him at that time. It was a great deal to give up vital force, and to acknowledge a universal mechanism. It was not denying much to deny evolution or the principle of the conservation of energy. The mechanism Lotze defends is, as he says, universal in extent and subordinate in significance. In the constitution of the world he acknowledges three distinct factors: the original matter, the laws of its motion and transformation, and the purpose or final cause of this development. The laws are universal because they are hypothetical; they furnish the major of a syllogism. But for an event to occur in the world it is not enough that there should be laws; there must be facts to which the law applies, data that by virtue of the law produce the event in question. Hence the subordinate importance of the law: what really determines the event is the presence of the data to which the law applies: these data constitute the minor of the syllogism, without which we should have no conclusion. And these data cannot in turn be explained by virtue of a law; even the most complete formula of evolution would leave the atoms of the nebula, their number and their disposition in space wholly unaccounted for. These primary facts, on which all depends, are precisely what every law leaves unexplained, so that in spite of its universality a law is only a relative and subordinate principle of explanation. Even if we knew the entire history of things we should still ask for a justification of it. We should demand that this set of facts should have the sanction of some authority, that it should not impose itself upon us without a good reason. This good reason can be nothing but a purpose, and a purpose is the content of a judgment, not of an idea. It is not there by virtue of the presence of things, but by virtue of a value attributed to them. The purpose is never a real thing or a part of the object realised; for so long as the purpose remains unfulfilled it is something that ought to be, but is not, and when fulfilled it is not a thing but a

relation, an action, an emotion. The purpose must not be regarded as the efficient cause of the process. It cannot be a ground of existence, but only a demand that what already exists should be a means to an end, and should be directed to an ideal result. The realisation of a purpose, says Lotze, is never the work of the purpose itself. The result must follow from the given reality according to general laws, and the purpose must be realised by their agency.

In this manner Lotze combines a belief in final causes with the doctrine of a universal mechanism. By mechanism, however, he does not mean either a material mechanism or a single quasi-mathematical formula, by which all phenomena should be determined. By mechanism he means simply government by laws of any kind. Mechanism can be psychical as well as physical; and physical mechanism has many forms and principles, such as gravity, magnetism, electricity and chemical affinity. These he conceives to be irreducible and fundamental; he deprecates the attempt to reduce all causation to one type. In this Lotze abandons the ideal of science; he gives up the postulate of the empirical intelligibility of things. To comprehend means to reduce to one type, to see in the unfamiliar a case of the familiar. And Lotze, in spite of his objection to reducing all events to one type, must himself reduce them to a small number of types; else all science would be annulled. The same method that has led us to reduce the multitude of phenomena to these few types might lead us to reduce them to one; and the same satisfaction that we find in the progress we have made, we should find in further progress. What test can Lotze have to decide where the simplification of natural processes should stop? Here we have a case in which Lotze's system of checks seems to work unfavourably. The check is external and arbitrary, and we cannot feel that it prevents conflict; on the contrary, it exemplifies the conflict.

An æsthetic ideal is what Lotze opposes here to a scientific ideal. The world must not become monotonous. If all events were of one type, nature would be the ceaseless repetition of one and the same act. All the variety we find in the world would be the subjective result of a process objectively everywhere the same; the variety of reasons for phenomena would disappear. Lotze is quite right. The reason for everything would then be the same sort of reason; always the cause of events would be of one type. And that is the ideal of science; doubtless the unattainable ideal, though to turn from it is to surrender the impulse to investigation. Were this ideal attained, there would be a

great monotony in the reason for the variety of things; but the variety of things would remain. In feeling that the world would be impoverished by unity of principle, Lotze seems to yield to a popular illusion. The opposition to new theories is often founded on belief in the ability of a theory to change the facts on which it rests. Such is the force of association that if the theory is discarded the facts themselves seem to disappear. In so far, of course, as the theory itself is an object of affection, the dislike to see it superseded is natural and legitimate; but this dislike is unreasonable when the old theory has no value but that which it borrows from the facts—a value that evidently will pass on to the new theory, should the latter be definitely accepted. The value is not, so to speak, the personal property of the theory, but the appanage of its office. And this is the case in the question before us. The variety of nature does not derive its æsthetic value from the multitude of physical laws; but each principle of explanation acquires dignity in proportion to the value of the phenomena it explains. Theories are like money that has the value of the things it can buy. And the variety of the world would retain all its interest and charm if we could express the principle of its causation in one phrase instead of in a hundred. The only change would be in the theory itself; but simplicity and comprehensiveness are the virtues of theories. The world as an object of experience would be no less picturesque for having a simple explanation, and the beauty of the explanation would be all the greater if it were simple and universally true.

Besides the typical unity of science Lotze asks us to give up the principle of the conservation of energy. The reasons for the second demand are two—first, the desire to admit action and reaction between body and mind, and second, the desire to admit new forces, new beginnings dropping into the midst of things and changing the direction of events. In defence of indeterminism Lotze invokes a need of the active and moral imagination, which certainly is very generally felt. Even if one does not happen to feel this need, and finds action and hope quite rational in the world of determinism, yet one cannot deny that the efficiency of mind and the freedom of indifference are among the usual demands of men's moral and emotional life. Lotze therefore is in his *rôle* when he defends indeterminism. In doing so he admits the utility of the hypothesis of the conservation of energy; he approves of it as a scientific instrument. Nor is his own mechanical principle very different in practice from a principle of uniformity. The laws of nature, according to Lotze, suffer no exception. But the data to which they

apply are not in turn accounted for invariably by derivation from previous conditions; sometimes they are new data derived from nothing. Just as in the end we should have to admit an inexplicable set of facts, constituting the given reality, so at any point in the development of this reality inexplicable elements may appear. But when once created these new elements enter into the realm of general laws; their influence on the further course of nature is determined by those laws; only their original appearance was undetermined. Thus instead of a principle of sufficient reason we have one of adequate effect, and instead of a necessary cause we have an inevitable consequence of everything in the world.

This distinction is plainly of more consequence in morals than in physics. For if the consequences of any fact are fixed, they can be fixed only by a law that makes that fact at the same time the sufficient reason for those consequences. The reservation of the possibility of a new and unaccountable appearance at any time does not affect the method of investigation; the hypotheses of science can continue to be framed as before. The only thing given up is the hope that these hypotheses may ever be adequate to the reality and cover the process of nature without leaving a remainder. This is no great renunciation; for that consummation of science, even if devoutly to be wished, is by no one really expected. Granting, therefore, that we have good moral reasons for denying the conservation of energy, we cannot regard its surrender as of great consequence to science, if, like Lotze, we substitute for it a principle of hypothetical mechanism. If the consequences of data are fixed, it matters little if we can know these data only as accomplished facts. The theory of science is necessarily hypothetical; for the proof that it describes the reality we must constantly appeal to the perception of the moment. We do not invalidate the theory by saying that this continued appeal to the fact is needed not only to show us that there is a reality to which the theory applies, but also what this reality is and what basis it offers for the application of the theory.

A contemporary philosopher whose mission is to reconcile sentiment and science might be expected to say a great deal about Darwinism. Lotze says nothing. His system was finished in his mind before the vogue of evolutionary theories. When they arose he ignored them as hasty and imprudent, and as resting on an inadequate basis of fact. It is impossible, however, to believe that his dislike of them is wholly the expression of a scientific scruple. Un-

doubtedly his eagerness to reconcile the idealistic and realistic temper led him to turn away from the moral difficulties that such theories suggest. For an alliance between general laws and moral purposes is much more easily conceived when these laws do not involve a Penelope's task, in the destruction of everything evolved. And a much more uncompromising temper than Lotze's is needed to see in the survival of the fittest a justification of the struggle for existence. These things, therefore, do not enter at all into that science which Lotze seeks to reconcile with our moral ideals. The significance of his solution, however, might not be affected even if we insisted on Darwinian theory; some details might be changed, but the general character of the system might remain. The modification of the principle of cause in such a way as to admit new beginnings is the only concession that science must make in Lotze's system, and I see no reason why science should not make it. The other concessions are not strictly necessary to Lotze. And we may now see what moral advantages Lotze offers us in return for this slight scientific sacrifice.

Lotze's metaphysical system may be roughly described as Leibniz's monadology so modified as to admit uncaused events. The intrusion of these new beginnings involves a change in the theory of pre-established harmony. For whenever an unexpected change occurs in a monad the harmony between its development and that of other monads is destroyed; to re-establish it, we require the interference of a cosmic power that makes for harmony, and that so modifies the developments of the other monads as to make them correspond to the development of that monad in which the uncaused change has occurred. The general plan of nature can no longer be treated as a *de facto* correspondence among the necessary developments of various things. The plan becomes efficient. It is not merely a principle of being, a description of the actual arrangement of the facts, but a principle of change, a power. Had the series of changes been wholly predetermined in each monad, the harmony among the monads might have remained a mere fact, a beauty that things possessed; which from the teleological point of view might be regarded as their cause or justification, as their worth, but which need not have become a force constantly guiding and checking them. But indeterminism makes a dynamical monism necessary for Lotze. On the one hand he declares that the plan of the world does not involve or demand all the changes that occur in the world: these changes are often unaccountable and

spontaneous. On the other hand the plan or purpose directs what further changes shall ensue, so that order may be maintained in the world after the unaccountable changes have occurred.

There is no contradiction in this conception: a dynamic monism is the price Lotze pays for his indeterminism. And the conception, when expressed in less technical terms, is a pleasing one—one that has many analogies and habits of thought in its favour. If we try to conceive a wise and beneficent Providence governing the world, we shall arrive at a conception similiar to Lotze's. The more current statements, which make the principle that directs things produce them in their entirety, really deny the idea of government, of providence, of beneficent activity altogether. The plan and purpose of things then become identical with their nature; no efficiency, no progressive and opportune application of the divine plan can be thought of: this plan becomes merely a description of the facts, the constitution of nature. Lotze's æsthetic and religious instinct has led him here to avoid the rash enthusiasm of those theologians who so magnify their conceptions as to make them formless. A God that accomplishes literally everything no longer has a definite function in nature: He is no longer a power that makes for righteousness; and although we may continue to use His name, we shall use it in vain, and the world will with perfect justice call us atheists. This is notoriously the case with Spinoza, and all pantheism has the same tendency. Lotze may be said to have reintroduced the idea of Providence into philosophy, where the notion of a divine being has been too willingly confused with a cosmic emotion. Those who adore nature in her nakedness should not seek to deck her out in the spoils of an historical deity.

Here and there Lotze himself seems to say that the cosmic purpose requires the appearance of the new elements when and where they do appear. This, however, would involve a teleological determinism inconsistent with his first principles. Such passages must be understood to mean that for the cosmic purpose to produce just the results it has produced up to a certain time, the contributions of chance must have been just what they were. So that in order that the world should conform to the ideal in this given way, rather than in some other way, the original data must have been what they were. Had they been different, the world, in order to produce the same values, would have had to move on different lines. The ideal, the goal of the world, is for Lotze a real end, which does not determine its means necessarily, but only determines them in view of given

conditions. Here again we see how moderation saves the ideas that an enthusiastic exaggeration destroys. If the purpose of the world required not only that certain values should arise, but that they should arise in given ways—in other words, if what is valuable is the whole world indiscriminately—no distinction is possible between ends and means, between good and useful, between purpose and fact. Teleology becomes a merely subjective and arbitrary method; everything is at once end and means for everything else. The attempt to make the world perfect leads to the denial of the validity of the idea of the good, since all attribution of value depends on the subjective interest that makes value arise. We are plunged into a pantheism toward which all the vague mistrust the word suggests is in reality justly felt. We have then a positive belief that the world realises an ideal, and that this ideal determines every detail in the universe, so that the omission or correction of the least apparent imperfection in it would in reality destroy its value and run counter to its principle. All our ideals, in so far as they condemn accomplished facts, are not only partial and human, but they are impious. The true value and perfection of the world requires that nothing should be realised but what is realised. The impiety of willing against God remains, indeed, necessary to God's own plan, and, therefore, in one sense innocent and proper, whenever it is actual. But this circumstance only shows how completely such a doctrine dissolves all our standards; even the excellence of being on the right side, of serving the general good, is lost through being evenly and inevitably shared by every existent thing.

This justification of everything, were it actually intended by Lotze, would in his system be much more objectionable than in Spinoza's, in which it undoubtedly occurs. For Spinoza has no God, properly so called; the world is not moral, and prescribes no particular form of being rather than another. On the contrary, it calls for every form of being impartially; and, therefore, being non-moral, it does not give the lie to our moral standards, to which, as moral standards, it is supremely indifferent, although, as psychological elements, they are essential parts of nature. Thus, although they are relative to our needs, we have a perfect right to treat our standards as absolute, since there is no other moral nature or law with higher authority. In the moral world our standards are absolute, and any crime against them cannot appeal to a standard and purpose above our own. But if we believe with Lotze in the moral and personal character of the cosmic life, in a conscious intention

and providence that guides the course of things in particular channels, and at the same time if we declare that everything is justified by the cosmic plan, we establish a moral being hostile to our morality, a god indifferent to human suffering, nay, delighting in it. For we have abolished the distinction altogether between ends and means, between purposes and conditions. The sanction of Providence has been extended equally and primarily over everything alike. No moral relations are possible between God and man; the only reconciliation lies in the annihilation of man's volition, whenever it does more than rejoice in the accomplished facts simply because they have been accomplished.

Lotze avoids these dangers by maintaining the distinction between given facts, laws and purposes in nature. The unity of the three powers is in their work, not in their nature and origin. They reduce to one process but not to one principle. The matter and the laws conspire to realise the ideal; but this is once for all the miraculous fact, it is an accident. The ideal does not demand this particular method of realisation; it might have been realised more quickly and better had the given facts been more favourable. Value does not reside in things indiscriminately, but belongs to them only in so far as they serve to realise an ideal, and this ideal is not a method or law, but a result—happiness. The happiness of the world, in order to be just this form of happiness, requires indeed precisely the actual series of past and present events; that is obvious enough. But different events might have yielded more and better happiness. Lotze is an optimist by temper; he feels that all conspire to a great and ultimate good. We should willingly co-operate, and be grateful. But he does not attempt to defend that theoretical optimism which calls this the best of possible worlds. It is justified now it is real by the values it contains; but these values are not unalloyed, and Providence might have had an easier task had Fate been more propitious.

In regard to Kant's formalism, and especially in regard to Hegel's, Lotze expresses himself with unusual energy. Hegel, he tells us (*Mikrokosmus*, iii. 43), saw in the preservation of the absolute idea not a means to the production of other goods, but an end in itself. Only the "most nonsensical form of mysticism" believes in purposes of the content and realisation of which no one is aware, or in goods that no one enjoys. "What is to be a good has the only and necessary locus of its existence in the living feeling of some spiritual being." "So long as we have breath we will fight against the starved yet so terrible superstition that,

lost entirely in the worship of facts and forms, forgets the significant aims of real, warm-hearted life, or overlooks them with incomprehensible negligence, in order to seek the deepest meaning of the world in the contemplation of the formula of evolution." Thus a great moral chasm separates the human and hedonistic standard of worth recognised by Lotze from the cruel theological optimism of the pantheists. Lotze speaks of the unity of the cosmic process, and of the plan of nature; but this unity never constitutes for him the value and justification of what comes under it. It is only the condition and means of producing conscious and happy life. The essentially momentary although often repeated and sustained happiness of living beings is what alone gives value to the scheme of things; such æsthetic and mathematical beauties as the scheme may possess have themselves value and existence only in emotion.

This rebellion against formalism undoubtedly puts Lotze on the side of common sense and human feeling; it keeps him free from that sophistry by which some would persuade us that the value of the world does not depend on the good it contains, but that the good itself has value only because it fulfils a necessary function in the universe. Yet the subject is not so simple as Lotze's tone might lead us to suppose. For, granting that value belongs to feeling, we still observe that the production of this valuable feeling depends on certain material conditions. Now nothing prevents our discovering an analogy between the conditions of our happiness and the laws of nature: there may be some similiarity of structure, some formal unity, between the world as a whole and that part of it we know to be an instrument of good. Suppose, for instance, the instrument of good in our case were a certain regularity or rhythm in our lives: did we discover the same regularity or rhythm in all nature, a legitimate analogy would lead us to regard all nature as an instrument of good. And in view of such a vast extension of the fields where values may be discovered, we should naturally cease to speak of our own feelings as the seat of value: we should regard intrinsic value as co-extensive with the analogy that shows nature to be an instrument of good. The form of nature, the type of events, would thus become the mark and condition of excellence; to discover a particular type would be to discover the worth of what conformed to it. And, indeed, if we are to estimate the value of the world in any other way than by its influence on our momentary moods, we must make some formal principle the basis of our estimate. We must select some typical process, some ideal of life, and attribute intrinsic

value to all that exemplifies it. Our reason for selecting one typical process rather than another, however, must always remain a human and subjective reason. It may be some type of event that in our bodies produces pleasure, or it may be some type of life speculatively pleasing, and prized for its dramatic perfection. And if we attribute value to anything in nature beyond the scope of our personal experience, we must in fact be guided by some rather obscure and doubtful analogy of this sort. The value we attribute to our own past pleasures is often not a direct recollection of their emotional quality; it is often an expression of our present æsthetic and moral judgment on the type of life we were then leading. The worship of forms which Lotze condemns is therefore more natural and excusable than he seems to consider it.

And the happiness that, according to him, the world produces, and that constitutes its value, can be discovered only by applying to nature a vague analogy drawn from human emotion. The happiness that gives this great value to the world is not mine nor yours, but the divine happiness, in which you or I may have some part; and evidently the existence of this divine happiness is known only by bold conjecture. The difference is not great between a person who, like Hegel, finds the value of the world in the idea it expresses, and one who, like Lotze, finds it in the divine happiness it produces. For that it produces divine happiness we infer from its obeying some law, from its fulfilling some idea; and the only addition Lotze makes to Hegel's theory is to materialise it a little by regarding the expression of the universal idea as a source of universal delight. The implication of a soul or spirit in which this idea or happiness should reside is the same in both; only while spirit for Hegel means the presence of the idea and its expression in history, for Lotze it implies also an accompanying emotion.

By humanising in this way the idea of the 'World-Soul,' Lotze wishes to gain two objects. In the first place the rather ghostly objective reason becomes a reality if it is also an objective emotion; a hedonistic system of morals can now take cognisance of it, and the glories of a divine life can be weighed in the balance against human misery. And in the second place, a cosmic life so conceived can be easily identified with the God of religion. Lotze is professedly a peacemaker; his object is to give satisfaction to as many interests as possible. He recognises the grandeur of that cosmic movement which Hegel thought he had discovered: here is a type of the absolute that must not be abandoned,

Lotze seems to feel, since it is in the nature of a description of the reality, a principle by which the march of events may be comprehended, and the secrets of nature translated into the language of man. At the same time the insight thus gained is purely intellectual; at best an analogy is discovered between the structure of nature and that of reason. Our feelings and moral aspirations remain isolated and estranged in the midst of this comprehensible world; there is little comfort in knowing that we live and die according to a universal dialectical process. But suppose this process is the working of a living being who finds infinite happiness in his activity? Then, whatever accidents we may be subject to individually, the life of nature is worth living; it is justified not only to itself but also by our own moral standards. The things we prize are not indifferent to the universal powers; the whole world exists expressly for the production of that happiness whose value we so intimately know. Yet this conjecture—for it is nothing more—if made by a single philosopher hardly can carry with it that authority which inspires belief. The philosopher has merely thought out what would be satisfactory and edifying if it were true; the impulse to believe it true can hardly come from his arguments. If he is to convince in a matter so transcendent he must make himself the mouthpiece of a popular instinct; he must be able to identify his conception with the traditional idea of God. Only by so doing can he give his ideal the semblance and warmth of a reality. His reasoning may serve to clarify a little the religious conception, but his theories, to live, must be vivified by the contagion of popular faith.

Lotze's task, therefore, is the identification of a cosmic law with a personal God. The chief instrument used to this end is the doctrine of indeterminism. For it is the appearance of unaccountable changes in things that turns the law of their reaction into a principle of government and efficient control. If the unity or law of things were a mere description of them,—a passive beauty of their constitution,—it would be hard to see how this law or unity constituted a living intelligence and will. Or, if it were arbitrarily declared to be efficient and real, then the efficiency and reality of particular things would seem to be destroyed. Lotze, by his indeterminism, tries to give vitality both to the creature and the Creator. He does not wish to think that the process of things is the mere consequence of a single act,—of an original collocation of elements. He wishes that absolute independence and originality should not be confined to the primitive choice of things to appear as they did appear, but

should be distributed throughout the cosmic process; so that at every point it may be possible that a new choice, a new and unaccountable fact, should repeat the original and miraculous choice of things to be as they are.

For Lotze, accordingly, the material cause of the world is not given once for all, but gradually. For a time the laws of nature rule over a material that remains unchanged, except by the operations of those laws. But now and then this material varies: new citizens, so to speak, are born into the state; new atoms drop into the sphere of cosmic attractions; the laws remain the same, but the data change of which the laws determine the effects. The virtue, therefore, which the reality shows in satisfying the ideal,—the miracle that independent and inexplicable facts should conspire to a happy consummation,—is not a virtue or a miracle found once for all and seen only in the whole of nature. It is a merit distributed among the parts of the whole, each of which, by an independent and timely entrance upon the scene, contributes its share to the fulfilment of the general purpose. The creation did not take place wholly at the beginning, but occurs partly also in us. Our lives are, in part, new creations, not mere consequences of what went before; and that momentous responsibility that falls on the determining forces of the universe is not confined to the eternal matter and laws of the world, but falls also on the events in its historical development.

The cosmos, however, in which these accidents can occur is none the less a living whole,—a total every element of which affects every other. And the movement of this cosmos is towards an ideal goal: its life is the conscious life of a God who knows His purposes, and is in the act of fulfilling them. But, as in this life there are unforeseen accidents, it is not comparable to the running down of a machine wound up in the beginning, and which ought long ago to have come to rest if it tended to any specific end. The possibility of accidents gives the purpose of the world something to do: it must restore an ideal order. The ship must be headed anew in the right direction after every gust and wave. The objective point remains the same throughout; but the course actually followed is not determined by it alone, since it does not wholly account for the state of things at any moment. The response to every given occurrence is, indeed, determined: the nature of the universal purpose dictates at every point what course the world shall take; but at the next moment it may be necessary for the universal purpose to speak again, since the world may find itself aside from its intended course. Providence

thus has a constant and real function: it must react on chance.

This real function is exercised by a conscious will; and we see how its influence, although exerted in every part of nature, is checked or interrupted by the accidents that intervene. Thus the cosmic life, although universal, has what is equivalent to an environment; since the unforeseen and uncaused events it includes are independent of its internal principle. This quasi-environment is not, of course, an external agent; but the unaccountable incidents in the life of nature, being inexplicable by its own law and condition, are practically equivalent to the interference of an external agent. Nature thus has a life; an internal principle and aspiration, which is its purpose, playing with phenomena which enter its life but are not products of its principle nor necessarily favourable to its aspiration. It is exactly in this way that our own life moves: the person has a certain will, a certain store of accumulated experience and digested knowledge, with certain habits and maxims which constitute the personal character; but these do not run out of themselves into a self-determined development; they are subjected to varying conditions, and the life of the man consists in his reactions, the reactions of his character, on what is external to him and not a product of his activity. And yet these foreign elements cannot affect a man until they enter into his consciousness or produce some change in his body: they must be effects in him. Were they not parts of his life they might as well not exist as far as he is concerned. So also, in Lotze's conception of the cosmic life, there are events that the principles of the world do not account for, and reaction on them constitutes the activity of nature and the task of Providence; yet these events exist only as events in nature, as modifications of the cosmic system.

It has been urged by some critics[1] of Lotze that indeterminism is inconsistent with monism and with mechanical law. And this in general would have to be admitted. But it is the beauty and peculiarity of Lotze's system that he modifies each of these doctrines just enough to make it consistent with the others. As I have tried to show, his mechanical law is only hypothetical; it determines the effect of given data, but it does not exclude new factors side by side with these predetermined effects. And the monism is a monism of the actual, not of the potential; at every moment a single power directs all that exists and fuses it

[1] See J. Wahn, *Zeitschrift für Phil. u. phil. Kritik*, xciv. 1.

into one dynamical system. But the monism is not a prophetic principle; it does not have power over the non-existent, nor ability to cause or prevent the appearance of new phenomena. A monism that covers everything, a principle that determines the relations of things throughout infinite space and time, would be inconsistent, not only with indeterminism, but with the fundamental conception of Lotze's whole philosophy—movement, succession of events, *Geschehen*. This is for Lotze the note of reality, the difference between things and conceptions. And the unity of the world is for him decidedly a reality, an act of consciousness, not a conception or description of an object. It is the actual unity of existing things, not the conceptual unity of infinite possibilities. And for this reason he is able to identify this unity with a divine life: a static monism describes the constitution of a world, not the action of a God. The real and dynamical unity of Lotze's world is essentially momentary; its historic unity is only comparable to that of a melody or a drama. At every moment an ideal direction is given to the world by the purpose that it pursues, exactly as we in accomplishing any task give an appropriate direction to our successive movements. And thus, barring inevitable accidents, a certain æsthetic and teleological unity does exist throughout the history of things. But this ideal and imperfect unity must be distinguished from the dynamical unity of each act; the difference is, in Lotze's own figure, that between the unity of a note and the unity of a melody, or between the unity of an act or feeling and that of a function or arrangement.

There is a danger, however, in this sort of monism against which Lotze has not sufficiently guarded. So long as the unity we predicate of the world is one of description or order, a formal or æsthetic unity, we have no difficulty in admitting unities of feeling, the actual moments of our consciousness, as elements of the whole. The world is one in the sense that it obeys one law, that the realities of which it is composed stand in certain relations to one another. We have a theory of the whole and experience of the parts; the units of feeling remain the real units, while the whole has only a unity of description. But if, like Lotze, we make the unity of the world one of feeling, a conscious act and moment of life, where is our own consciousness? If side by side with the universal consciousness, that consciousness is not universal; it is not the life of nature, but an element of nature. And if we say that our feeling is merely an object or part of that universal consciousness, we fall into the absurdity of denying the reality of the only thing we know

to be real—namely, our actual consciousness in its actual form. All the objects of our thought may, indeed, form part of the content of a larger thought. As our single pulses of consciousness include a great variety of feelings and ideas, so a universal thought, being actually and absolutely one act, might yet include everything we conceive of. All objects can without difficulty be supposed to be objects for a single moment of thought, since after all the richest conception we can ever have of things must in our case be the content of such a moment. But by no possibility can an actual unity, the unity of a moment of consciousness, be included and taken up into another unity of the same kind. The content of our lives may reappear; but the fact that it is to reappear in different relations, as an element of a wider consciousness, shows that the thought in which it may reappear is not our thought. The subject-matter may be identical, the act is distinct.

Lotze has not faced this obvious difficulty with all the frankness one might desire and expect. He continues alternately to speak of his cosmic principle as a natural law that embraces individual realities, and as an individual reality on its own account. And it cannot be both. It is true that Lotze's analysis of what constitutes a thing or substance has led him to some paradoxical definitions that may explain his attitude on this point, so fundamental in his system. A substance, he tells us, is the *property* a series of events has *of producing the idea* of a substance; or, again, a thing is the *actualised law* of its behaviour. These definitions may have some justification as applied to objects; material substance and visible things may be products or "actualised laws," because they may be unreal and merely phenomenal wholes. But undeniable psychic realities cannot evaporate in the same manner. The soul is doubtless a substance according to Lotze's definition; but the events of which it is composed have a much more solid and primitive reality than the idea their aggregate produces. So long as we speak of conceptions, there is no difficulty in making one idea include and involve another. But Lotze's cosmic soul, or rather its successive states, are not conceptions, but living realities. In these successive acts other consciousness cannot be included. In the idea of the entire cosmic life, our lives may be taken up, since that is only a historical unity. A man's life includes all his thoughts, because his thoughts are elements which make it up, the life as a whole being only an ideal existence, an æsthetic total. And so the life of a nation, or of the world, may include all particular lives, since we are here dealing with artificial and conven-

tional units. But if all Lotze's protests against formalism are to be taken seriously, he proposed to describe to us a cosmic spirit that truly lived, a spirit that had thoughts and emotions greater than those of men. We must, therefore, see how this promise is to be fulfilled.

The inadequacy of our reason to cope with questions of this sort may have appeared to Lotze a ground for treating them in the tone of poetry and pious eloquence. And we certainly can have no desire to make the inmost nature of things submit to our definitions and formulations. At the same time, so long as philosophers continue to see in these ultimate questions the ground and sanction for their other opinions, so long as the existence of God, the vitality of nature, and the freedom of the will are insisted upon as primary and literal truths, we have a right to demand what is meant by these phrases, and exactly what implications they contain. And a clear and definite statement of Lotze's position would have to take, I think, some such form as the following.

The mind of God surveys the world *sub specie æternitatis*. God has the *idea* of all reality constantly before Him. This idea, of course, includes the idea of all our experience, the idea of all the accidents that occur in the progress of evolution. The history of things is thus exhaustively grasped by the divine mind. But when we turn from the idea or knowledge in the divine mind to the reality known, we find that it is diffuse and multiple. The feelings and acts of consciousness that compose this reality are innumerable and of all grades of intensity and comprehensiveness. In this hierarchy of feeling the divine feeling is *primus inter pares*. It is the most intense and most comprehensive. It is that feeling in which the self-consciousness of the world resides, for it contains the idea of the law that governs the world and of all its exemplifications. A knowledge of the springs of one's action and an approval of them is what Lotze understands by personality. Therefore personality belongs properly only to the divine life, since in all other lives the idea of the entire system of its conditions is not attained.

In this conception Lotze follows and amplifies Hegel. In his system, too, perfect personality belonged only to those moments of life in which the Idea that governed nature was reflected upon, in which the principle of things was discovered. Then a mind became identified with fate instead of being subject to it. But Hegel allowed us to perceive that this identification was the exclusive privilege of the Hegelian philosopher in his sublimest moments. Lotze, on the contrary, demands an immortal Philosopher in whom is

the constant idea of the law and beauty of things. Yet this difference, although great, is one of degree only. Not every part of nature is self-conscious, not every part is aware of its guiding principle and of the guiding principle of the whole. There is a great deal more life in the world than the life of God, if by His life is meant that which is conscious of its own divinity. This, I fancy, no one will venture to deny. But it is possible to say that experience is naturally ascribed to a person even if at the time he is not conscious of himself as a person. It is sufficient that at some points of his existence he should attain self-consciousness and from these points should survey the surrounding experience and appropriate it as his own by recognising it to be the complement and condition of his present state. In this way we appropriate our dreams and scattered impressions, and call them our own. The relation that our moments of clear self-consciousness have to our moments of absorption in particular objects —our dreams and incoherent impressions—may be the relation that the feeling called *par excellence* divine has to the other feeling that exists in nature.

There is a sense, then, in which even our own life may be said to be part of the divine, since it may be appropriated by the actually divine moments as involved in their own nature, as complementary exemplifications of the law of which they contain the idea. But what really embraces God and man in one unity is a law, an idea ; in the actual unity of God's thought is only the representation of our thought and feeling, just as in the actual unity of our feeling is only a symbolic and ideal representation of the thought of God. Divine life may be represented in ours by an immanent ideal, by the sense of what we might be could we transcend all our limitations. And in the divine life ours may be represented as the ideal realisation of a plan, as the object of creative will. But in all such speculations one thing is excluded, because it is a contradiction in terms : that a limited thought should *be* an all-inclusive thought, that what is conscious pain here and now should be, *in actu* and not in a representation, part of an eternal pleasure.

The cosmic unity, then, that demands in each thing changes corresponding to those in every other is an ideal unity, a law, not itself a thing ; or if Lotze insists that it is a thing, he can call it such only by virtue of his definition, which makes substance a quality or ideal effect of elements more real and primary than substance itself. But while his metaphysical monism thus reduces to a mere definition, his theological aim is satisfied. The monism being formal, the theism can be real. Under the cosmic

law arise thoughts that comprehend it and feelings that approve it. These compose the life of God. The cosmic law is not efficient; it is a mere scheme of description, a statement of the order in which realities arise. Efficiency belongs entirely to the realities themselves, and chiefly to God as the only constant and perfect reality. His efficiency consists in knowledge of what happens and in will that it should happen; but these events are not in Him, since they are essentially finite and transitory, although undeniably real—being, in fact, our own thoughts and feelings. When anything arises according to the idea and intention of God, it is created by Him. That is all that creation or voluntary production of any sort can imply. When anything arises not according to God's idea and intention—and we remember there are such accidents—it is one of those ultimate data with which Providence deals, one of those conditions out of which the divine wisdom brings forth ideal order. For God, since He sees things *sub specie æternitatis*, these conditions are all present from the beginning, as well as the process that ensues; but for us who are parts of the process, the conditions are still in part future; for the matter with which God works is not a given number of atoms, but the series of unaccountable and accidental events that break out in the course of evolution.

If this interpretation of Lotze is not erroneous, he has admirably succeeded in combining into a system the indeterminism, the teleology and the theism in which he saw the demands of our moral nature. These, again, by the single concession of absolute uniformity in nature, can be combined with the results of science. And no one, I think, will fail to admire the beauty of this conception of the life of nature, and the ingenuity with which it combines various convictions which we all retain, although philosophers have often found them to be contradictory. The reality of events, the truth of our natural belief that something happens in the world, that thought, the demiurgus, has not yet finished his work, but continues to hammer at matter and transform it into new and unexpected shapes,—this conviction is reconciled with belief in universal mechanical laws. And the responsible and original decision by which things are what they are is distributed throughout nature, and not confined to the adoption in the beginning of a tyrannical constitution that allows no activity in the world but that which it directs. If the formulation of doctrines that appeal to mankind—if expounding to men what they really believe and are trying to say of the world—be the task of philosophy, Lotze has

admirably fulfilled it. As a description of the life of nature, absolute idealism, tempered by indeterminism and moralised by an efficient teleology, leaves little to be desired. The purpose of the world is the production of happiness: by this doctrine we escape a formalism that sees value in mere order without reference to the intrinsic worth of the realities involved. And the purpose is not accomplished by magic and irresistibly, as if by the *fiat* of the Creator: it is accomplished laboriously on a foreign material, furnished at incalculable times and places. Thus teleology does real work: it impresses an order on things not themselves produced *ad hoc*. This is one of the most subtle and beautiful parts of Lotze's conception; we must distinguish the sense in which the elements of being come of themselves, without reference to the ideal, from the sense in which, at the moment of being taken up into the world, and by virtue of belonging to the cosmos, they become servants of that ideal. For the ideal is the heat that keeps all things fluid, and forms them anew at every moment; and the contributions that the world receives from without are at once merged in it, and become a portion of its living mass.

To some, doubtless, it will seem that Lotze has not given much satisfaction to the demands of sentiment: he gives us no apology for Christianity, no assurance of immortality, no rigid optimism. But Lotze is a philosopher; his function is to show us what values and beauties the world contains, not to promise us personal advantages, or soothe our private griefs. The seat of value, he says, is consciousness; but chiefly the divine consciousness, which to us is revealed in beauty, in our own seasons of happiness, and in our faith in the deep roots that good has in nature. Our joy, however, is but an echo of that joy which sees the purpose of the world realised; the goal of things is the happiness of God, although our happiness may be generously involved in it. It is an error to suppose that unless Providence works for our own greatest good, and satisfies all our aspirations, there is no real God, no divine benevolence, no possible worship. This is an exaggeration of pious egoism. The divine life, as Lotze conceives it, and as paganism represented it, may be its own purpose, it may feel no obligation to bestow on men the highest possible blessings, and yet it may be benevolent within limits, and regally kind. A naturalism like Lotze's allows only a divinity that grants to men what their life actually supplies, although it does not wholly exclude the hope of immortality. As Hercules for his virtue, or Ganymede for his beauty, was admitted into the company of

the gods, so may any man live again in another sphere if the sense of the world, if the happiness of God, require and allow it. Anything so valuable in the eyes of the universe as to deserve more than an ephemeral existence, will be maintained in being. In this problematic immortality, as in much else, Lotze approaches the ancient conception of things. We are too apt to forget that paganism was a real religion, and the only sort that is possible, if we admit the finality of the world, such as it appears to us. Other religions have seen in nature a temporary setting for lives that, in truth, belonged to another sphere. But if we abandon supernatural conceptions, we cannot establish other relations between God and man than those which experience manifests. We may trace to Providence our successes and failures: and our consolation must be sought in the faith that nature's life is greater and happier than ours. The spirit of this system is the ancient spirit of contentment, restraint and silence. Religion is not the reversal, but the sanction of the judgments of the world.

Shall we say, then, that Lotze has succeeded, and shown how the results of human science may be reconciled with the demands of sentiment? He has succeeded, perhaps, in the measure in which, from the nature of the case, it is possible for one man to succeed. He has reconciled what seemed to him the results of science with what he felt to be the demands of sentiment. And this is no merely personal success; all those who share Lotze's point of view and associations, and they are many, will find in his solution a guide to their own. But, at the same time, it cannot be admitted that natural science is now, or need be in the future, content with the *rôle* Lotze has assigned to it; and much less can it be admitted that the demands of feeling are fixed and universal, or capable of any such definite expression as Lotze gives them. Science, after all, is a social possession, and, in spite of the uncertain limits of its domain, we have in science recognised authorities and recognised doctrines. Up to a certain point it is possible to say what are the results of science. But who is an authority in feeling? What doctrine is admittedly the expression of our moral needs? Hardly theism, and certainly not that very positive and conservative theism which Lotze requires. Much less the indeterminism of which he makes so much: when, like Lotze, we frankly reduce indeterminism to the intrusion of chance into nature, its moral value evidently becomes very equivocal. Indeed, there is no such thing as a stable and compact group of moral ideas to be weighed in the balance

against the results of science. There is some presumption in calling our personal or even national preconceptions the demands of the human conscience; and there is some danger in talking as if theories had any essential value other than truth. It is unworthy of philosophy to regard affection as evidence, or to contrive a compromise between sentiment and fact. Its business is rather to transform sentiment until it is in harmony with fact, to naturalise the soul in the realm of reality. Lotze may be quite right when he says the conflict between science and sentiment is perennial, but it is fought on ever-changing ground. Had moral impulse in all ages called for the same theories, they surely would have been established and made instinctive long ago, just as belief in other men's consciousness is established and instinctive. The truth is that sentiment clings to whatever beliefs are familiar, and, therefore, are associated with habitual motives and emotions. Some beliefs are certainly in themselves more sublime or flattering than others; but this sublimity or suavity will seem oppressive and degrading to those unaccustomed to them, while they seem inspiring to those accustomed to regard them as sanctions and supports. The case is like that of patriotism: one country is undeniably more beautiful and civilised than another, and yet every man's "moral demand" is for his own. And this is no natural limitation, no excusable folly: it is the expression of a natural piety and joyful resignation by which a man conforms to the inevitable conditions of his life. The conflict Lotze tells us of is not essentially a conflict between theories morally necessary and theories morally repugnant, but one between familiar theories, sanctified by innumerable associations, and unfamiliar theories recommended by new evidence. The ideas that are morally impossible to-day may be morally necessary to-morrow. Lotze has too much ignored this possibility. Yet the problem he set out to solve could itself arise only by virtue of this transformation of feeling. If our feeling of what naturally should be differs from our sense of what actually is, it is only because we live in an age of transition; the mind has emigrated, but the heart has remained in the 'old country'. Lotze's philosophy is an admirable expression of this state of things; his solution is ingenious and suggestive in many ways, and has its reality and importance for us now. Only it lacks universality, it lacks the radical quality of nature's own slow but inevitable solution. This solution, Goethe tells us, is renunciation—a renunciation, however, that is not pure loss, but the condition of the only possible and permanent gain.

III.—THE PROGRESS OF PHILOSOPHY.

By JAMES WARD.

[Prof. Campbell Fraser's article on "Philosophical Development" in the last number of MIND reproduced the substance of an Address which he delivered to the Glasgow Philosophical Society at the beginning of the winter session, 1888-9. Here follows, without alteration, the closing Address of that session.—ED.]

THE words of Schiller which the Glasgow Philosophical Society has taken as a motto—

> "Welche wohl bleibt von allen Philosophien? Ich weiss nicht.
> Aber die Philosophie, hoff'ich, soll ewig bleiben"—

might, at first blush, be regarded as a confession at once of the hopelessness of the attainment and of the worth of the pursuit of philosophical knowledge. Hamilton, as we all know, held substantially this opinion, and supported it in his usual style with a wealth of illustration drawn from all quarters. In his first lecture on Metaphysics he says:—"The last worst calamity that could befal man, as he is at present constituted, would be that full and final possession of speculative truth, which he now vainly anticipates as the consummation of his intellectual happiness . . . and the man who first declared that he was not a *σοφός*, or possessor, but a *φιλόσοφος*, or seeker of truth, at once enounced the true end of human speculation and embodied it in a significant name". Now, I do not propose at present to controvert this position either wholly or in part, but merely to suggest that in whatever respects it is true of philosophy it is true of the several sciences. We might just as well ask, Which of all the physics, or which of all the chemistries remains? as ask, Which of all the philosophies remains? No exposition of a science, no matter what, that is a century old, would be considered adequate to-day; and *the* science, absolutely regarded, is as much as ever an ideal. We talk of the sciences as if they were completed wholes, whereas all that exists in fact is but a collection of approximations—partial, inchoate, imperfect. Archimedes, Galileo, Newton, are immortal names in the history of physics, but Newton's *Principia* is no more *the* science of physics than Euclid's *Elements* is *the* science of geometry. The progress of all the sciences shows the same essential

features: isolated truths come first, and principles last of all; working hypotheses, like rudimentary organs or temporary scaffolding, lead to the establishment of laws by which they are refuted and superseded, or they themselves are confirmed as permanent constituents of knowledge by a more or less gradual process of verification; resemblances undetected at first relate the many with the one; closer scrutiny discloses composition and complexity in what had long been regarded as without parts and without structure; and even that thickest of all veils—familiarity—is pushed aside, so that boundless fields of inquiry stand revealed where never a question had been asked before. With many differences in detail, this and the like is what we find, in the main, in every department of knowledge; and it seems fairly obvious that it must be so, since Mind is one essential factor in knowledge, and the only one that is the same in all. What I would venture to maintain, then, is that philosophy, as regards its history and development, does not differ *in genere* from the body of the sciences. In intent it is as legitimate as they are, and, allowing for differences of subject-matter, it has advanced about as much. Just a word on each of these points.

Without wasting time in any discussion about the precise definition of philosophy, it ought to be allowed to us that the problems of philosophy, whether soluble or not, at least start from and arise out of knowledge that we already have; and more than that cannot be claimed for the problems of any science whatever. Perhaps the true character of philosophy is nowhere more conspicuous than at its very dawn, when we see it, as Ferrier has remarked, in immediate contrast with the mythology it supplanted. The one, directed solely by poetic fancy, provided a deity for every hill and stream, for every wind that blew, and every star that shone; the other, possessed by the idea that there is an ἀρχή or first principle underlying the endless variety that appears, though it failed utterly to find what it sought, nevertheless "inaugurated a new epoch, and gave birth to science among men". The problems of philosophy and science were at that time merged in one general attempt to generalise and simplify the endless particulars and bewildering diversities of sensible experience. In these later days, when many sciences in succession have been differentiated from that nebulous beginning, though the central problem still remains, it is now separated by a vast system of orderly knowledge and far-reaching law from the concrete manifold of sense. And since it is assumed that all we

know is to be found in this imposing circle of sciences, philosophy is once again brought into comparison with the mythical; but this time only to be identified with it, when proud *savants*, forgetful of their sires, ring the changes of their despite, as they consign first the mythical, then the metaphysical, to a common oblivion. Both, they affect to believe, are the creatures of imagination, with this only difference: mythology is the inflorescence of fancy, metaphysics but the cobwebs of the brain—that sort of mouldy, cryptogamic inflorescence that a fungus will produce. For all such conceited *persiflage* there is not, I believe—at least if we look at the history of knowledge broadly there is not—one iota of justification. We cannot, of course, deny that philosophers did often lose themselves in a world of dreams, abstracting when, as Bacon says, they had better have analysed, and concerned about the phantoms of the cave or the schools when they should have essayed to interpret nature by the dry light of reason. But all this, rightly regarded, was but a mistake of method—a mistake that vitiated all investigations alike — being, in fact, almost, if not altogether, inevitable. For just as childhood precedes manhood, so preconception, dogmatism, deference for authority and tradition come before the cautious, critical, all-exacting spirit that yields to evidence and nothing but evidence, owns no bias and no fears, and bids even reason to justify herself and disclose her limits.

Listening to contemporary detractors of philosophy, one might suppose that the sciences had accomplished their own emancipation, while philosophy alone remains still befooled by empty but imposing conceits. The truth is rather that all the emancipation the sciences can claim was wrought for them by philosophy; wrought not by those who were the representatives of the modern *savant*, but by men who in these days would be stigmatised as "genuine metaphysicians". When the history of modern thought lies far enough in the past to be comprehended as a whole and in its true proportions, it will be seen, perhaps, more truly than we can see it now, that what might be called the dogmatic stage ceased and the critical began at the same time both for science and for philosophy; it will be seen, too, that the men who inaugurated the change were really philosophers, *i.e.*, men of reflection, though they were often scientists or men of research as well. Galileo (in 1610), at the age of forty-six, said that he had spent more years on philosophy than months on mathematics. Descartes' account of himself (in 1637),

when he was only a few years younger, shows that philosophy had a similar preponderance with him. By these two men, it is allowed, the foundations of modern exact science were laid. Nor can it be said that they were great physicists spite of their early philosophy, as one might perhaps say they were great thinkers spite of their early scholastic training, which both alike soon outgrew and cast aside. Dühring, in his *Critical History of Mechanical Principles*, shows at some length that genuine speculation was throughout the prompting and informing inspiration in the ascertainment of these principles. In Galileo and Descartes, certainly, we find no traces of the over-vaunted Baconian method: it was from ideas, not from facts, that their insight came. Instruments and industry were all very well, as Lagrange has said, for the discovery of Jupiter's satellites, the phases of Venus, the solar spots, and such like; but to analyse and unravel the primary laws of nature called for genius of a philosophic mould. It shows nothing but ignorance, though unhappily ignorance that is very widely spread, to suppose that, whereas modern science is a new birth, separated by a catastrophe from the astrology, alchemy and magic of the dark ages, modern philosophy, having learnt nothing and forgotten nothing, is but the survival of Scholasticism. Flippant references to angels dancing on the point of a pin, or to chimæras buzzing in a vacuum and fed on second intentions, are still considered not an unfair parody of the "genuine metaphysician's" inquiries. It would be easy to retaliate. Anyone who would be at the trouble to search the Royal Society's *Transactions* for fifty years back and more would find as much arrant nonsense as, and more bad reasoning than, he would easily discover in as many pages of the old Schoolmen. Modern philosophy is quite as truly a new birth as modern science; and the founders of modern science in breaking with the old philosophy did not abandon philosophy altogether. On the contrary, they founded the new science on a new philosophy, and but for this new philosophy the new science would have been a very feeble thing and its future would have been most precarious and uncertain.

It has to be remembered that, although—wherever the human race has been sufficiently advanced—the philosophic impulse has invariably been *one* factor in human life, it has never been a factor independent of all others. As I have said, the *quæsita* of philosophy have always been determined by what were regarded as *data* at the time. Thus the business of philosophy being primarily formative, any

defects in the empirical matter supplied must have told disadvantageously on the system constructed. Moreover, philosophy has to take account of much besides the current *knowledge* of the time—ethical and religious ideas fall equally within its ken. And there is still another point to note.

Looked at broadly, the history of philosophy may be regarded, to borrow an idea from the late Prof. Harms, as philosophy experimenting. The experiments were very different in kind from those of physics and chemistry. Still they are entitled to be called experiments, in so far as they were so many mental manipulations of the theoretical and practical stuff of life with a view to the discovery of its hidden springs and inner unity. In these experiments we observe a twofold procedure, sometimes one, sometimes the other, being the more prominent. At one time, that is to say, philosophy was mainly intent on organising. At another, the failure of such attempts led to a new scrutiny of the material to be organised; in a word, constructiveness yielded to scepticism or criticism. The longest and the dullest period in the whole history is that preceding our own—a Sahara of 1000 years, which Hegel advises us to traverse with seven-league boots. In this period, say, from the 6th century to the 16th, a powerful Church, the sole depository of knowledge, was bent on constructing out of the traditions of the Greek schools and the dogmas of the Christian faith one harmonious and rational system. The very endeavour is itself a most impressive proof that the philosophic spirit once there cannot be eradicated, and cannot be smothered. Under any circumstances, there must have been much that was transitory and provisional in the philosophy of such a time; but, as it was, there seems literally nothing of all the vast fabric that has remained. Yet there was progress—the only progress possible with such material. For one thing, the formal apparatus of thought was enormously improved in "precision and analytic subtlety". It is noteworthy that J. S. Mill quotes the testimony of Condorcet to this contribution of the Schoolmen to the progress of good philosophy as a fitting motto for the opening of his *Logic*; and it is perhaps not generally remembered that Mill himself, disgusted with the superficiality of Aldrich, applied himself instead to a careful study of scholastic logic. But to the Schoolmen we are indebted for progress in another respect. It was they who began the struggle for the emancipation of reason; at first, more or less peaceably under cover of the doctrine that there are two kinds of truth—book-keeping by double entry, as it has been profanely called—a doctrine that could hardly

stagger theologians wont to talk of a sevenfold interpretation of Holy Writ. The attack on authority thus covertly begun led on, of course, to the open rupture which ushers in the modern period.

But neither the logical apparatus of the Schoolmen nor the emancipation of reason can be regarded as properly parts of philosophy. However vitally they concern it, they are still but circumstances outside it; so that, as regards the actual succession of philosophies, there is nothing between the ancient period and the modern. But what we now call science, as distinct from philosophy, was, if anything, in a worse plight. The historians of science do not forget this. Thus Bacon refused to take account of more than six out of the twenty-five centuries he reckoned from the dawn of history as either *scientiarum feraces earumve proventui utiles*. Again, Whewell's name for the middle ages is the stationary period. When philosophy is talked of, this sterile waste is most unfairly included with the rest. In fact, what hindered the advance of knowledge in one direction hindered it in all; and so soon as freedom of thought and inquiry was achieved, speculation and positive science moved on apace.

This brings me at length to the second of the two points mentioned just now, *viz.*, that, allowing for differences of subject-matter, the advance of philosophy is quite comparable with that of science. Of course, anything like direct comparison is impossible, just because of this difference of subject-matter. Who can say what philosophical truth is to be set off as equal in importance with the law of gravity, or how many scientific theories can outweigh Kant's formulation or solution of the question, How are synthetic propositions *a priori* intelligible? In these days of universal examinations, no doubt still stranger comparisons are made: when, *e.g.*, A, who writes a sonnet, is adjudged equally deserving of a fellowship with B, who has ascertained all the primes between 19,000,000 and 20,000,000, or with C, who has discovered that in the tadpole's economy there is a special class of cells for the absorption of the tail as soon as that juvenile appendage is done with. But in all these cases what we really compare is the ability of the worker: and we assume that the best work in one department is equal to the best in another; and, generally, that excellence of about equal rarity is of about equal value. When in this fashion we compare philosophers with other men, we have nothing to fear; and, fortunately, in almost every case a circumstance comes to our aid, which perplexed examiners

always hail with especial delight: the best philosophers were what we in Cambridge call "double firsts". Leaving aside Plato and Aristotle, and confining our notice to modern times, when philosophy is regarded as a distinct pursuit (so to say, as a profession), we have, along one line, Bacon, Locke, Berkeley, Hume; along another, Descartes, Leibniz and Kant,—all unmistakeable "double firsts". Everyone of these men would remain highly distinguished on the score of literature, science or politics, if all their philosophical work were counted as nothing. But what we have now to estimate is not the men, but their work; and the question is, whether the men of philosophy have advanced, as the men of science have; or whether they are only marking time on the old ground, and are now left far behind.

What the truth is in this respect might perhaps be effectively realised if we were to imagine one of those old sages from Miletus—or even a thinker so recent and of such abiding influence as Descartes—to come to life again, and hear all that has been done in science and in philosophy since his day. He would be told that all the varied forces of nature are but various modes of transformation of an energy that is changed in form continually, but never destroyed; that all the so-called elements furnish evidence that they also are but modes of one primal stuff—inert, impenetrable and indestructible; that, in an equation involving the three fundamental units of time, space and mass, a complete account could be given of all that really happens in any material system, large or small, as it changes from one given configuration to another; that life, *for the spectator*, is ultimately resolvable, without residuum, into such a series of physical changes or reflex actions; and that mind, for the spectator, is in like manner ultimately resolvable into life. The Ionian philosopher would probably be a good deal less impressed than we should expect. The sublime generalisations, the splendid analyses of modern physics, would seem only to bring us back again to where he was in the sixth century B.C. Then it was the simplicity of ignorance; now it is the simplicity of knowledge. The countless phenomena carefully ascertained by thousands of observers and experimenters, which might have defied all attempts at system, are no obstacle after all: there *is* a principle underneath phenomena, and all change is according to law. The naturalness of this result, so to say, would prevent astonishment in one who knew nothing of all the inductive methods, experimental devices, elaborate instru-

ments and tedious calculations by which so very obvious and necessary a truth had been empirically won. *Artis est celare artem.* The master-key is, to look at, the simplest key of all, and is most a wonder to him who has made it Similarly here.

As for Descartes, he, no doubt, would fully appreciate the triumphs of modern science, and the narrative would fill him with pride. Did I not say, he would urge:—Grant me extended substance and motion, and I will start afresh, and reconstruct the world? He had not hesitated to extend his mechanical theory to brutes, and even to man—so far as sense and imagination are concerned. On every side, he would see only the substantial confirmation and consummation of his own views. Thus, neither for the father of ancient philosophy nor for the father of modern would there be anything altogether unfamiliar in a summary of the present state of science: they would not, as is sometimes supposed, be comparable (let us say) to a couple of trilobites of different silurian eras reappearing in a cretacean sea. They would see that knowledge had advanced, but the standpoint of exposition would be the same.

But, in turning to philosophy, the situation would be quite otherwise. The ancient who would readily take in "the recent advances of physical science" would probably have seen in these all the philosophy for which he felt a need: at any rate they would follow on, and fill out the formal outline of knowledge he had himself conceived. But in the philosophy of these days he would find previous questions raised, of which he had never dreamed. To form any idea of these he would have to learn to regard knowledge itself as a problem, and to surrender the very δὸς ποῦ στῶ of all phenomenal achievement for analysis and conscious reconstruction. He would need to see that it is not enough to understand the world as it is given, to organise and unify experience, but that this systematic unity must be itself understood. Like some fabled artificer who, as he polishes his rough silver slab, finds the dull and opaque turn bright and translucent, till at length he discovers himself reflected in it and sees beyond and through his work his own form revealed, the Ionian thinker might surmise that the perfecting of the objective hemisphere of knowledge had revealed the subjective, making it possible to test the accuracy of the external by its perfect reflexion of the internal, or to examine the internal thus projected and made large. This would be to him a most impressive advance.

To Descartes *redivivus* the changed face of philosophy would

seem less strange and more intelligible; but the change would perhaps strike him more, and would certainly please him less, than the changes in science. *He*, of course, would fully understand the problem of knowledge, and might see at once that his own solution had been in part false, in part superficial. His sole criterion—*logical* clearness and distinctness—he would see ravel out the whole tissue of knowledge into the meaningless identity A is A, and end in the *reductio ad absurdum* of the Wolffian philosophy, poised like an inverted pyramid on the principle of contradiction—only stable, because it is empty and bound to topple over in search of a base the moment it receives the smallest real content. The distinction of pure intuition and pure understanding (of which he had had an inkling, but which, as alien to the leading idea of his own system, had remained only an unfruitful excrescence, atrophied and ugly), he would see developed by Kant into the cardinal doctrine of the two stems of human knowledge—whereby an escape was possible both from the empty formality of his own rationalistic successors and the blind scepticism of their empirical opponents. He would realise that there is more in geometry than clear thinking, and see that a philosophy wrought out *more geometrico* is for ever an impossibility: since geometry must rest on intuition (*i.e.*, spatial perception), and philosophy start solely from the analysis of notions. It is true, I should say by the way, that Descartes only attempted the treatment of philosophy according to the geometrical method as an experiment on the suggestion of his friend, Mersenne, and was careful to point out that, "in so far as that method is synthetic, it is not so applicable to metaphysical truths as to the elements of geometry which have a relation to the senses". Still this only amounts to the inkling I spoke of just now: Descartes did *try*, and was afterwards not unsatisfied with the result, leaving it as a suggestion to be developed by Spinoza, who represents the inevitable outcome of one aspect, at least, of Cartesianism. Besides the recognition of two factors in knowledge, which, in his imperfect analysis, he had almost overlooked, Descartes would perforce acknowledge advance as regards another point likewise hidden from him by his geometric manner—I refer to the necessity of the conceptions of Cause and End (or Purpose) to give unity to experience. Geometry knows nothing of experience, and nothing, therefore, of cause or process in any guise. What Spinoza did completely, Descartes had almost done, *i.e.*, identified cause with reason, and rejected final causes altogether.

Again, even if we put the most favourable interpretation possible on his doctrine of innate ideas, it is still only an assumption that cuts the knot: it does not make necessary and universal knowledge *intelligible*, and a necessity that is not intelligible is only a contingency after all. In a word, his doctrine of innate ideas is only a sort of a preformation-system, to use Kant's phrase. As Reid put it: "The power of judging in self-evident propositions may be compared to the power of swallowing our food. It is purely natural." We do it, just as "dogs delight to bark and bite, for God hath made [us] so". This is better, certainly, than the *generatio æquivoca* of Mr. Herbert Spencer's book-plate, for it does recognise that knowledge cannot be explained out of the perpetual stimulations of sense, any more than a chunk of wood can be "licked into shape" as a top, and made to spin, by continually whipping it. Yes, it recognises the problem certainly, but it does not solve it. Descartes would have the less difficulty in acknowledging Kant as the Copernicus of philosophy, because everyone would admit that a psychological solution was the one naturally to be attempted first; and because, further, there was not in his day—what, in fact, he had largely contributed to produce—a body of natural science which could prompt to a careful reflection on knowledge as a product, and make a transcendental logic possible. In Descartes' time, the only science there *was* was mathematics; and this, as we have seen, would lead away from any attempt to frame a theory of experience in the Kantian sense.

This second mention of the philosopher's tendency, one might say, his function to set out by reflecting on the existing body of knowledge, suggests another line of remark concerning the advance of philosophy as compared with the advance of science. If we might illustrate the advance of knowledge as a whole by the figure of a clock, then science might be called the minute-hand, and philosophy the hour-hand, of this clock. They are both really connected and moving in the same direction; and, though their rates of movement differ, this is compensated by a difference in the significance of their motion: one stage onwards for philosophy means a whole cycle of scientific progress. Now, that philosophy is never much behind we may see in another way, and that is by taking note of the little excursions into the groves of Academe in which men of science occasionally indulge. There is altogether quite a literature of this sort—a good deal of it in British Association addresses and the like: in that and other ways men of such eminence as

Huxley, Tyndall, Cayley, and I must not forget Prof. Tait,[1] with Helmholtz, Du Bois Reymond, Claude Bernard, and many others abroad, have discussed various marginal questions on the confines between their special subject and philosophy. I take up the first of these festive prelections that comes to my hand: it is a good specimen of the class, and will sufficiently illustrate what I mean. It is an address by Helmholtz, delivered in celebration of the founding of the Berlin University, and deals with *Die Thatsachen in der Wahrnehmung*. Let me quote one passage from the summing up:—"The causal law is, in reality, a law given *a priori*, a transcendental law. To prove it from experience is impossible; for experience cannot advance a step, as we have seen, without employing inductive reasoning, that is to say, without the causal law. Moreover, from what we have already experienced—even if we could certainly say that everything observed so far has happened according to law—we could only inductively infer, *i.e.*, by assuming the causal law, that the causal law would be valid in the future also." After a little declamation and a verse or two from Goethe, Helmholtz goes on:—"In what to me has always seemed the most essential advance in Kant's philosophy, we remain still at the level of his system. In this wise I have frequently in my previous works taken occasion to emphasise the agreement of the newer sense-physiology with the teaching of Kant, but without, of course, intending to swear by the *verba magistri* in every detail." The whole address, in short, is little more

[1] One instance of the spirit of this famous triton among the metaphysicians, this seer of the Unseen Universe, may perhaps be allowed as a note. In his excellent treatise, *The Properties of Matter*, there is a chapter on Time and Space that opens thus:—"We begin with an extract from Kant, who, as mathematician and physicist, has a claim on the attention of the physical student of a different order from that possessed by the *mere* metaphysicians". Here follows about half a paragraph from Sec. 7 of the 'Transcendental Æsthetic' in which Kant is endeavouring to clinch his epistemological argument as regards mathematics. The "therefore" (*demnach*) of the opening sentence is however omitted, and without further word or comment Prof. Tait proceeds:—"On matters like these it is vain to attempt to dogmatise. Every reader must endeavour to use his reason, as he best can, for *the separation of the truth from the metaphysics* in the above characteristic passage." On reading this, one wonders (1) whether Prof. Tait has any sense of humour; (2) what the residuum of truth is when the metaphysics is winnowed or washed away from this "characteristic passage"; and (3) why the physical student is called upon to exercise his reason upon it without a hint of the premisses to which it is little more than a conclusion!

than Kant assimilated and turned into Helmholtz. This class of literature bristles with references and choice quotations for philosophers of "our present level," to use Helmholtz's phrase. But if philosophy has not advanced, how comes it that scientific men, when they feel the deeper thirst, find their well of waters only in these latest springs? And how is it, when they want to blaspheme, that they fall back either on the crudities of some earlier philosophers or on the extravagances of Hegel or Schelling?

But now, although a dispassionate consideration might soon satisfy any open-minded inquirer that philosophy does move on, there are two or three reasons why it seems to have accomplished very much less than it really has. First, all unsolved and perhaps insoluble problems of any generality fall to the province of philosophy. Some of them go back to that nebulous beginning of all knowledge from which, as I have suggested, the sciences, like planets, have separated and condensed into definite form, and round which they still revolve. All the ultimate questions; all the antinomies, theoretical and practical; the relations of Thought to Being, of the Finite to the Infinite, the One to the Many; the crowd of unanalysed conceptions and uncriticised assumptions of everyday thought and conduct—these all belong to philosophy. It is something even to put them in order, reduce their number, show that some questions are at bottom absurd, and not only cannot be answered but need never be asked; to determine the definite issues within which the solution must lie, and so forth. But even, were all this done, the ultimate difficulties would still remain. Complete knowledge is an ideal; if we regard it as attainable it is infinitely far off. Now, when we boast of the advance of science, we measure the distance we have come, which is finite, so that future advances are comparable with it. But when we despair of philosophy we think of the distance we have to go, which is infinite, and must always remain so, unless, indeed, our rate of advance itself becomes infinite; that is, unless intellectual discursion should some day give place to intellectual intuition.

Another reason why philosophy is apt to appear practically stationary is that, as already hinted, any ground it does win from the void and shapeless infinite is ceded sooner or later to science; or if no science already exists to which it could be logically assigned, then a fresh science is constituted for the purpose. In this way, mainly, Logic and Psychology have arisen, and by such accessions from philosophy they are from time to time extended. And in this

way, too, Epistemology, or the science of knowledge generally, has arisen, and, as I venture, spite of the heresy, to think, has attained a large measure of independence. Just as most of the old Natural Philosophy has become the Natural Sciences, so much of the old Moral Philosophy has become the Moral Sciences. Philosophy proper still remains as the 'leader' or main growing-point of the whole tree of knowledge, and so regarded seems as inchoate and nascent as in the days of Thales or Pythagoras.

But now, in one respect at any rate, I think, we are bound to admit that philosophy in the stricter sense might have made more progress than it has. Perhaps it is an inherent infirmity, perhaps it is essential strength; at any rate it is true of most philosophers that they attempt everything. *Aut Cæsar aut nullus* is the philosopher's legend. In this spirit he sets to work himself: in this spirit he judges most of his predecessors. No doubt eclecticism in philosophy is the feeblest thing of all: rhapsodies and centos are absolute absurdities here. But it is one thing to take pieces out of different speculative systems: it is quite another to recognise and formulate a truth that has been found out before. A comparison of a History of Philosophy such as that of Erdmann or Zeller with such a History of Sciences as Whewell's or Dühring's would illustrate what I mean. In the history of science we observe continually that the propounder of a wrong theory has nevertheless ascertained some important law; as Newton, for example, ascertained the laws of the refractive dispersion of light, although his corpuscular theory as to the nature of light itself is false and has been overthrown. The law is remembered: the theory is forgotten. Now, in philosophy, as it seems to me, there are similar instances; but here it is the fashion, as the Germans say, to swill out the child along with the bath (*das Kind mit dem Bade ausschütten*). Locke and Hume, we are told, were sensationalists; Descartes and Leibniz were rationalists; and the insufficiency of both these theories of knowledge being made apparent, the only interest of the historian is to treat them as 'moments' in the general development of philosophy. It is not held to be necessary definitely to single out and emphasise the particular truths enounced by thinkers whose speculative standpoint has been superseded. The Dualism of Descartes and the Occasionalism to which it led; the problems of Substance and Cause, as propounded by Locke and Hume respectively; Hume's resolution of all the objects of human inquiry into two kinds—to wit, Relations of Ideas and Matters of Fact;

Leibniz's principles of Sufficient Reason and of Continuity,—these may serve as instances comparable in importance with the special laws of nature which the historians of science record. Now I would make bold to maintain that philosophy should have its *monumenta rerum gestarum:* its history should not give the impression of a series of failures—each thinker in succession being handled in accordance with the maxim, *Falsus in uno, falsus in omnibus.* Science treated after this fashion would scarcely fare better: but it never is so treated. The positive results, be they large or small, isolated laws or wide-reaching principles, are what the historian of science puts foremost. And whether it would serve all the purposes of a history of philosophy or not, something of the same kind is at least a desideratum there.

But anyone who should attempt to supply this want would be at once confronted with a difficulty; though the difficulty would be the amplest justification of his enterprise. He would find the same thing, essentially, said over and over again with accidental differences of statement, due merely to its place and purpose in the speculation of each particular thinker. In science, when a truth is made out it is definitely formulated and receives a name; there is Snell's Law, Boyle's Law, Avogadro's Law, Ballot's Law, and so forth. But in the whole region of philosophy, with the partial exception of Logic, there seem to be no rights and no rule. Philosophy has no nomenclature and no terminology. Every giant and every pigmy states and misstates and restates much as he wills: even babes and sucklings rush abroad brandishing the Infinite and the Absolute with infinite ignorance and absolute conceit. If there is anything fixable, why do we not fix it? If any of our conceptions admit of definition, why are they not defined? Such *axiomata media* of philosophy might gain or lose in comparative importance as time went on; but that is true equally of science, which still insists on precision as far as it goes. It is no uncommon thing—it is rather the rule—to find philosophers disclaiming any gradual completion of philosophy: they intend nothing short of *das All auf einem Male.* Thus not only the conceited Descartes concludes his *Principia* with the statement "that there is no phenomenon of nature whose explanation has been omitted in this treatise," but even "that most modest and retiring of mortals," dear old Immanuel Kant, while characterising philosophy on the lines of Descartes as "dogmatic swill" (*dogmatische Gewäsche*), is still persuaded that metaphysics, which on his view is the one science that can confidently

reckon on permanence and completeness, has attained its goal in the *Critique of the Pure Reason*. Of this much he assures us at the end of his *Prolegomena*, and in the preface to the *Metaphysical Foundations of the Natural Sciences* he again expresses the belief that this absolute completeness of metaphysics generally has enabled him to exhaust the special metaphysics of the material world. Of the still greater extravagance of those who came after him, I forbear to speak. Alas! the best of men are but men at the best. It is not given to the human intellect ever to soar: it can only climb. There are wide differences between science and philosophy, of course; but the truism just now urged in defence of philosophy against its vilifiers from the side of science, if allowed at all, must be allowed to cut both ways. If all departments of knowledge have much in common, since Mind, the most important factor in knowledge, is the only factor that is the same in all; then, while we may expect philosophy to progress as well as science, yet—if it claim to be knowledge—it cannot do more than progress. And, certainly, it would advance more rapidly and with more ease if the positions already attained were definitely set down and named.

But this leads us naturally to consider for a moment the present state of philosophy. There has been no philosophy in England since Hume, says one; and none anywhere since Hegel, says another. 'Back to Kant' is the recent cry in Germany, and I have known some in England who have cried 'Back to Reid'. But in truth I very much question if there has been any harking back at all. Systems of philosophy are no longer the fashion, certainly. But there have never been so many competent experts—as we say nowadays—at work on philosophical questions as there are at present; and never has philosophical literature multiplied at such an amazing pace. The great bulk of this literature falls into one or other of two divisions—historical criticisms or monographs on special points—such as Geometrical Axioms, the notion of Experience, the Relation of Body and Mind, and so forth. And even the historical studies which form the first division are mainly confined to special lines of thought—a history of the doctrine of Categories, the various forms of Idealism—or to special thinkers and the development of their doctrines. So that we may say generally that philosophical activity has entered upon a new phase; system-makers have given place to specialists. As in science, so in philosophy, ours is the age of monographs. Many are the Jeremiahs with a speculative turn who lament this state of things as an unequivocal sign of degeneracy and

disaster; and nobody will maintain that it is an unmixed good. But then what is? Certainly not the *Panlogismus* of fifty years ago. The history of philosophy is full of reactions; and one might fairly say not only that the present state of things is one of these, but that it is a reaction caused chiefly by that exuberant system-making of which the Hegelian philosophy is the crown and climax. This is very impressively put by one bred and born in the school of Hegel, I mean by the venerable Edward Zeller—first in a once famous lecture on "The Plan and Problem of the Theory of Knowledge," and afterwards in his *History of German Philosophy*. Referring at the end of the *History* to the movement in question, as one in which the rapid succession of comprehensive systems left speculation exhausted and forced at length to heed the demand for proofs, Zeller remarks: "On the one hand the flagrant contradiction in which their results stood when confronted with the empirical sciences shook the faith in philosophical systems first of those outside and finally of their own adherents. On the other hand, this state of things gave energy to the endeavour so to modify the principles and methods of philosophy, the materials of the empirical sciences being freely used for the purpose, as to eliminate such contradictions once and for all." Then, in the concluding paragraph, having previously characterised German philosophy from Leibniz to Hegel as an almost unbroken Idealism, he continues: "In Hegel's *a priori* construction of the universe this Idealism celebrated its systematic consummation. The stagnation of philosophical productivity which commenced at Hegel's death, the gradual dissolution of the leading schools, the distraction and uncertainty which possessed everybody, plainly showed that the turning-point had come; and when, hand in hand with the decline of philosophical activity, there came work the most diverse and most varied in the region of the empirical sciences, especially the natural sciences, it was thereby clearly indicated that the new philosophy must enter into closer relation with these sciences, that she must avail herself of their results and their procedure, and must supplement her former all too exclusive Idealism by means of a sound Realism."

It is above twenty-five years ago since Zeller abandoned the Hegelian standard. The assimilation of philosophy and science which he foretold has well begun, in proof whereof is this continual production of monographs. Some fifteen years later the periodical known as *The Quarterly Journal for Scientific Philosophy* was set afoot, and the best of the younger philosophy of Germany comes to light through its pages.

Here thinkers of such repute as Paulsen, Siebeck, Benno Erdmann, Göring, Wundt and many others have given in their adherence to the position that—to adapt a dictum of Kant's—philosophy without science is empty and science without philosophy is blind.

But let no one suppose that Zeller or any of those I have mentioned intends for a moment that the sublime speculations of a Spinoza or a Hegel are to remain now and henceforth meaningless or useless. The point is that they do not belong to the problems of philosophy in the present. A vast gulf has disclosed itself between the knowledge so far attained and any Absolute Idealism that can claim to be more than a hope or a faith. Many a lofty mountain that appears to have an unbroken contour from base to summit, when we view it as a whole and from afar, discloses, as soon as the actual ascent begins, minor eminences and intervening valleys innumerable. Then, for those who can only climb, true progress requires that they lose sight for a time, perhaps for a very long time, of the final goal; and quite possibly the really highest peak may turn out later to be one not at first descried at all. So the matter stands with philosophy: to-day we are really further on and have no call to hark back; albeit the prospect immediately before us is not the grand panorama seen as in a vision by those who went before. It may be objected that on this view it is impossible to draw any line between philosophy and science. If this means that there is, or at any rate should be, continuity between the two, it must be granted. But it must not be taken to mean that philosophy is itself but a science. Philosophy on any view endeavours to make our knowledge and our practice as a whole intelligible. It is no more a part of the sciences than life is a member of the body; in like manner it is no more separable from the sciences than life from vital organs.

Philosophers, then, may not be poets, and cannot be seers. Ideas are indeed their sole province, but only such ideas as deal straight with facts. There is a famous saying of Fichte's—"Tell me of what sort a man is, and I will tell you what philosophy he will choose". Such language would be ridiculous applied to science. Fancy saying that the kind of geology—I will not say geometry—that a man chooses depends on the sort of man he is. Fichte's words are full of truth and have deep and important practical bearings, but what they refer to is not scientific philosophy. No, the philosophy which, as I think, has most promise about it now is one that is content to submit to limits in return for stability. There are many alternative

theories concerning matter, mind, the past, the future—in short, concerning the universe generally—between which at present our existing knowledge does not enable us to decide. Such are of the nature of hypotheses, and, pending some critical settlement, cannot be accounted actual constituents of philosophy. Take, for example, the alternatives of Monism and Monadism: the one offers us unity by way of substance, the other offers us unity by way of organisation. Subjective preferences may incline A to the one and B to the other; but anything like a decision, which shall command assent, whether or no, is out of the question. If it were not, we should not have such continual vacillation between the two, even in our own time. Scientific philosophy has to remain in suspense here much as I imagine scientific physics has to remain in suspense concerning the question whether matter is to be regarded as homogeneous and continuous or heterogeneous and discontinuous.

But some may here object that this is Positivism and not Philosophy. Are we to believe, it may be asked, that the settlement of the ultimate questions of philosophy depends on the ascertainment of fresh facts: is philosophy to depend on measurement as well as science? Not at all; the business of philosophy is with ideas,—that everyone must allow. To be sure, the accumulation of fresh empirical particulars does entail from time to time the emergence of new ideas of philosophic import: take the so-called metageometry, or the theory of natural selection, as instances. Still, what I especially would urge is, that we have not yet sufficiently cleared up and connected the ideas we have; and that, till this is done, such ultimate questions as that between monadism and monism have to wait. What philosophy seems to want—as I suggested earlier—is *axiomata media*, middle principles; and it is because the supply of this want is at length widely recognised as our immediate business that I venture to think philosophy is still strong, though no longer startling.

But, now, what of the future? Is philosophy to remain for ever, or not? Who can tell? In the earlier days of our race, when habits of thought at once geocentric and anthropocentric had never been, as now, so rudely disturbed, an answer would have been forthcoming confidently enough. But it is one thing to believe that the world is reasonable, and quite another to expect oneself to see its reasonableness. The first is an implicit postulate of all philosophical inquiry —nay, of all science whatever. But even if the world be thoroughly intelligible, it may be that the human race can never understand it. Our intellects may be for ever too finite

and too fallible, even if we recognise the limitation to the phenomenal on which Kant insisted. Or it may, indeed, very well be the case that with such limitation a satisfactory *rationale* of the universe is essentially a contradiction. And if so, what then? Might it not happen that the human mind will at length cease to ask questions which have baffled it so long? A complete adjustment to environment and conditions would, in fact, seem to involve the eventual atrophy and disappearance of a propensity that has never been satisfied. Something of this sort is the opinion of thinkers of the stamp of Comte and Spencer.

Against this death of philosophy from inanition, we should, of course, urge—as I have just now been attempting—that philosophy *has* progressed; and, further, that if the sciences advance indefinitely, there will always be work for philosophers to do. But to this last remark there is a possible rejoinder that deserves some consideration. The indefinite advance of science may be, so to say, asymptotic: though it should never actually come to a standstill, it may yet, as regards those first-rate generalisations that open up new vistas for philosophy, reach what will be practically a stationary state. Reverting to a simile I used just now: if the science-finger of the clock of knowledge comes almost to rest, must not the philosophy-finger do so much more? And yet it does not follow, for several reasons; one of which will bring more directly before us another side of philosophy, so far only incidentally mentioned.

It does not follow, we may first observe, because, even if the number or extent of our scientific principles is limited, there is still an opening for continuous advance in the co-ordination and rationalisation of those principles. A man is inferior in size to a whale, though really its superior in organisation. It is this peculiar *quality* of knowledge as a unified whole, largely (though not entirely) distinct from quantity, which is, at least, one special concern of philosophy. The same material may have very different forms: an ounce of protoplasm, organised as a jelly-fish, and passively drifting with the tide, though it be alive, is a very different form of life from the lark, soaring and "singing in the blinding sky". Still, we must admit that the quality I have attempted to describe is not wholly independent of quantity. Looked at as a mere question of possible combinations, it is clear that, with a finite number of terms, there is but a limited number of possibilities, and the best of these might be reached in time. Then we should have the final and triumphant philosophy: the last and best surviving its inferior com-

peers—surviving them, but embodying in itself all the partial truths they contained; the paragon of philosophies, as man is commonly accounted the paragon of animals, exhibiting in himself the essential excellence of all animated nature. At first, the thought of *the* philosophy thus attained at length is a grateful one; but it is not so for long. As G. H. Lewes has somewhere said, "Mankind alternately seeks and shuns finality". And it is plain that the conception of a partial experience of the whole vast sum of things, however completely that experience is classified and transmuted into philosophy, is unsatisfactory, if not—as I just now hinted—contradictory. Either *the* philosophy must be co-extensive with being, or knowledge is not to be the prime source of its sufficiency. It must depend for its perfection on something besides theory; and, as we all know, philosophy does also take account of the questions: What ought I to do? and What may I hope for?

Now it is, more especially, this inclusion of the practical and religious elements that forbids us to think that philosophy (if it does not disappear altogether, as the Positivists teach) must assume a final form, supposing the complement of scientific laws humanly ascertainable is ever made up. It is often alleged, as a grievous shortcoming of Locke, that he is content to say our knowledge is sufficient for our practical needs. For my part, I venture to think that his fault lay not so much in the principle he here assumed, *viz.*, that knowledge is subordinate to practice: it lay rather in his ignoring the fact that our knowledge is, after all, *not* sufficient for our practical needs. The earthquake of Lisbon, the cholera bacillus, the dissipation of energy, are all strictly and emphatically cases of natural law: they suggest no theoretical difficulties as such. A theoretical philosophy, which justified pessimism—so far as we could regard it abstractly *as* theory—might satisfy the claims of knowledge as fully as one that justified optimism. We cannot insist on omniscience as essential to a perfect philosophy, but it is essential that such a philosophy should satisfy our moral and religious nature. We may even go further, and say that, were our moral reason satisfied, we could acquiesce in a finite knowledge, which would not satisfy our merely intellectual nature, abstractly considered. This, by itself, knows no measure: it is only in ethics that we voluntarily impose a mean.

When we try to take stock of the world of life, and observe the relation between experience and action, we see at every stage that action is in advance of experience: all things that live seem to learn by doing. A spirit of hopeful

adventure appears to possess everything: I might say a spirit of faith. The whole story of evolution is typified in Abraham, the father of the faithful, who "went out, not knowing whither he went". Lungs were not first acquired by water-creatures who then proceeded to live on land: birds were not reptiles that first got wings and then began to fly. The function leads to the structure rather than the structure to the function. The world is full of efforts justified only by the results. There was nothing, we will say, in past experience to justify the first attempts at living on land or moving through the air; *also there was nothing absolutely to forbid it.* The attempt was made, and practice brought perfection. With a new sphere of life came new experiences and fresh enterprises. Say what we will, the practical man *will* reason back from consequences, and not merely forwards from premisses.

If we cannot have omniscience then, what we want is a philosophy that shall justify faith—justify it in the only way in which it can be justified by giving it room. So far, at least, one must agree with Kant in the famous passage in the Preface to his first *Critique*, ending with the words: "I must remove *knowledge* in order to get room for *faith*". But, as I have attempted briefly to suggest, practice may enlarge our theoretical horizon; and this in a twofold way: it may lead into new worlds, and secure new powers. Knowledge that we could never attain, remaining what we are, may be attainable in consequence of higher powers and a higher life, which we may morally achieve. All seems to turn then upon whether our existing knowledge, with such theoretical philosophy as it makes possible, leaves this room for faith, and so for growth.

Assuming this room left, two opposite speculative hypotheses present themselves, which I must be content to designate as the religious and the non-religious. Neither, from the nature of the case, can logically refute and silence the other. It is here, by the way, that those words of Fichte I referred to just now are in point. The future of philosophy depends on the issue between these opposite hypotheses; and what I would suggest is that that issue will in turn depend on the practical results to which the two lead. It will be a case of the survival of the fittest. Mankind seems bent on making the experiment perhaps on a great scale. In ignorance of the future of the race, we cannot, on theoretic grounds, forecast the future of philosophy.

IV.—DISCUSSION.

Dr. H. MÜNSTERBERG ON APPERCEPTION.

By the Editor.

Is the psychological function to which Prof. Wundt would appropriate the hitherto unsettled name of Apperception radically distinct from Association? This is the question to which Dr. H. Münsterberg more particularly addresses himself in the first part of that remarkable series of *Contributions to Experimental Psychology* which (as noted in Mind, Nos. 56, 57) he has begun to publish.[1] The question is not at all new, being in fact as old as psychology itself; but it has acquired a new prominence of late, in this country as well as in Germany. It has been urged upon us here, in the home of Associationism, that without positing a function of attention, subjective activity, activity of consciousness, will (or what not else, so long as the essential import be *activity*), there can be no scientific understanding of mind,—any more than it has been found possible in common life to speak of mental experience without words of active meaning. The special interest attaching to Wundt's similar declaration in Germany arises from the experimental grounds on which he seeks to base it, or—what comes practically to the same thing—from the psychophysical attitude which he desires always to maintain in psychological inquiry. For, if Wundt asserts an apperceptive activity beyond mere associative process, it is not that he does not labour to interpret the one as well as the other in physiological terms. In spite of various expressions which have led others (like Prof. Bain in Mind xii. 174) besides Münsterberg to doubt whether he thinks it of universal application, it is not really to be supposed that the prime champion of the psychophysical method in this generation is not as much concerned as any of his critics to obtain by means of it the necessary basis for strict experimental investigation over the whole mental field. Now when assertions are based on experiment there is the signal advantage that by experiment they can be decisively tested. This, then, is the task which, in regard to Wundt's doctrine, by preference over any other assertion of an efficient activity of consciousness, Münsterberg has undertaken in the first of his

[1] *Beiträge zur experimentellen Psychologie.* Von Hugo Münsterberg, Dr. phil. et. med., Privatdocent der Philosophie an der Universität Freiburg. Heft 1. Freib. i. B.: J. C. B. Mohr (Paul Siebeck), 1889. Pp. xii. 188.

published researches, bearing the special title of "Voluntary and Involuntary Combination of Ideas".

This memoir, like others that have so far followed it in the series (see below, p. 297), has the noteworthy feature of not putting forward any elaborate tabulation of numerical results, but of presenting these in the most highly condensed form consistent with intelligibility and serviceableness for inference. A deft and untiring experimenter, it is yet about the reasoned interpretation of his results that Münsterberg is chiefly concerned. Not only, therefore, does he include with all his researches (in their published form) a careful review of previous work done on the subject of each, and develop at length the conclusions to be drawn from his own experiments, but he places in the front of his *Beiträge* an argumentative statement of the aim and method of his whole inquiry. To those who may have come to think that the proof of recent advance in psychology is to be found in the new fashion of severe numerical presentation, Münsterberg's wealth of argument, often polemical, may seem to indicate a falling-back into earlier unscientific habit; but, surely, it is not so. There is not yet such universal agreement in matters of psychological principle that all that remains for the scientific inquirer is to sink himself in special questions and heap up experimental values in bald tabular form. Questions of general principle are still among those that most need consentaneous determination; and if this is to come, as it can now only come, by way of rigid experiment, no prior or sequent discussion that helps to make the experimental test more precise and telling is anything but in place. Apart from a certain disposition to range somewhat widely in argument and perhaps some superfluous repetition,—which it would be well to repress and avoid as far as possible in the interest of an enterprise that has to make its way with readers but is now (after its third part) clearly not going to fail through shortcoming of its author,—it may fairly be said of Münsterberg's experimental work that it has peculiar value just from being so pointedly prepared by general consideration and driven so completely home.

Coming now to the direct aim and purport of his carefully planned scheme of research, it certainly cannot be charged against Münsterberg, however it be with others, that he does not constantly bear in mind the necessity of making no psychological assertion that has not its definite physiological counterpart. While his investigations are declared to be psychological —that is to say, neither physiological on the one hand nor metaphysical (philosophical) on the other—they are yet psychological in a sense that keeps the physiological reference ever in view. Not that he denies the possibility or legitimacy of a purely subjective psychology, working with its own appropriate conceptions and hypotheses. This he does as little as he fails to see, from the philosophical point of view, that physiological facts,

like all other facts of objective science, can have ultimate expression only in terms of conscious (which is properly subjective) experience. But within the range of phenomenal science, where facts of nerve-physiology stand in obvious relation with facts of subjective psychology, he is most of all impressed by the circumstance that the one class—objective as they are—lend themselves to a definiteness and a continuity of representation unattainable with the other. It is, then, psychophysical consideration which he aims at carrying consistently through, in the interest of a scientific understanding of mind. And the prime question, of course, is how the facts of (subjective) consciousness are to be conceived, for this to become possible.

To this question he replies with all due explicitness in his introductory sections (pp. 1-63) on "Consciousness and Brain": not for the first time, indeed, for he had already faced the question in a previous critical essay (*Die Willenshandlung*, see MIND xiii. 436), where he sought to work out a psychophysical theory of Will in all its manifestations, low or high. The difficulty is where conscious experience seems to be of a sort that can only be phrased (subjectively) in terms of action. It is not always such; for there is now what may be called a general allowance, that muscular reaction innervated from the brain under stimulus from afferent nerve is an adequate physiological expression of the simpler kind of psychological experience covered by the name Sense. Such mental aggregates, too, as are plainly of associative origin are hardly denied to be representable by definite brain-configurations,—whatever difference of opinion may remain as to the exact (subjective) analysis of Association. The difficulty, no doubt, is already there, or still earlier at the stage of Sense, in as far as either of these kinds of experience may be held, after all, to import some degree of conscious activity; but it becomes most truly marked where Volition for personal ends, or Thought as subjective reaction upon the multiplicity of experience that passively accrues, is in question. Here it is that Wundt finds it neccessary to oppose to anything that can be called Association a function of Apperception,—which he leaves in general with purely subjective expression, though at times seeking to connect it in a more or less halting way with process of the frontal brain-lobe. Münsterberg, on the other hand, makes it his express care to see whether the phrasing in terms of activity of consciousness, which so ill bears physiological translation, is as indispensable subjectively as it is not denied to be subjectively admissible. By way of analytic inquiry, directed especially upon that notion of conscious Ego or subject to which is ascribed the power of striking actively into the stream of mental occurrence, he claims that not less admissible is another manner of psychological statement for which the corresponding physiological expression is not so far to seek. The problem, in fact, as he urges, is to interpret all that is called

activity or change of consciousness as change of conscious *content*. So interpreted, there need be no more difficulty (beyond greater complexity of statement) in finding the physiological formula of thought or volition than of bare memory or sense. But to Münsterberg it is at the same time clear that, in thus transposing the psychological theme for consistency of scientific understanding, the limit of possible explanation should be well observed. The fact of consciousness itself, with all that it directly implies,—for this, he holds, there is no meaning in seeking a physiological expression. In other words, it is the empirical Ego of psychology—not the pure Ego of philosophical consideration—whose doings it is possible to interpret in terms of subjective "content," and thus render translatable into the other language employed by psychophysical science. There is the more need to note this point which Münsterberg so explicitly makes, because Wundt, if prone to bring consciousness as an unknown quantity into psychological explanation, has yet committed himself (like others in these days) to the general position that consciousness has its physical expression in terms of the collective functioning of the brain (or nervous system). Between the two investigators, it may seem a case where the adage holds true that the half is more than the whole. Consciousness with its fundamental activities of discrimination and assimilation (or however they are expressed) may very well be taken as simple assumption, not needing or admitting of any other kind of expression,—provided that none of the specific questions of our mental life with which the psychologist has to deal, remain withdrawn from the kind of scientific determination that has been found so effective with some.

For, now, the peculiar importance of Münsterberg's work lies in the kind of questions which he is able, from his point of view, to subject to experimental treatment. The point of view has often been taken before, if never, perhaps, with such careful discernment of the issues involved: what no one previously has done is to make so good a beginning of turning it to scientific account in detail. The question being this—whether there is anything in so-called apperceptive activity that takes it outside the sphere of associative process (assumed to be psychophysically intelligible), Münsterberg seeks to approach its determination by two different lines of experiment. The first is directed to seeing whether, in circumstances progressively more complex than in a certain simple case of reaction where, according to Wundt, apperceptive activity of consciousness must already be supposed at work, there is not evidence that all that goes forward is unconsciously performed, in a manner that can only be physically represented. The other is an attempt to bring acts of judgment or choice (as all would call them) so into relation with cases (as commonly described) of mere association, that whatever psychophysical account may be given of these must be held equally applicable to those.

I. The first inquiry makes use of a distinction established experimentally by L. Lange, one of Wundt's pupils, and interpreted by Wundt himself in accordance with his apperceptive theory. The time of reaction to sensible impression is found to vary according as the reagent's attention is directed to the impression to be received or to the movement to be put forth. It is considerably longer in the former case; and this being interpreted to involve a specific act of conscious apperception (of the impression) absent in the other case—where the reaction is supposed to follow with the directness (as it were) of a reflex movement—the 'sense-reaction' is spoken of as 'complete,' the 'motor reaction' as 'shortened'. Now Münsterberg bethought him of seeing how the relation of the two kinds of reaction might turn out in circumstances where the shortening could not be supposed due to the effect of habit—rendering the act (secondarily) automatic. For this he decided to work with the five fingers of the right hand, and get a reagent (Dr. *Thumb*, as it happened) to respond with movement of particular finger to particular stimulus, and eventually to particular *kinds* of stimulus that gave progressively more and more scope for what might seem to be conscious discrimination and identification. The apparatus employed did not in principle differ from that used in the simple reaction-time experiments of Wundt's laboratory, and all this part of the case may here be passed over with the remark that nothing in the way of care or precaution seems wanting to the work. Sound uttered by Münsterberg himself was the stimulus chosen, and the time was measured in thousandths of a second (σ) between his utterance, synchronising with pressure of a knob, and the reagent's movement of response, consisting in the raising of particular finger from a keyboard on which the five were at rest. The first point to ascertain was whether all the fingers could be raised upon stimulus with equal readiness, and this, after some practice, was found to be the case. Then the experiment went forward in a way and to a result that may be summarily described as follows.

The reagent's time (1) with any finger being found, upon average of many trials to be 160σ, 120σ, respectively, for 'complete' and 'shortened' reaction to uniform stimulus, he was next tried with different stimulus for each finger. Thus (2) the thumb was to be raised at sound *one*, and so on to last finger at sound *five;* here after due trial, of course in pell-mell order of utterance, the figures became 383, 289. Again, (3) the words appropriated to the different fingers in order being *lupus, lupi, lupo, lupum, lupe*, the figures obtained with this quite artificial association were 465, 355. So far, the object was only to give practice in definiteness of response, the possible effect of habit not being eliminated. But now (4) there were at one and the same time allotted to the fingers in order five cases of the three pronouns, *ich, meiner, mir, mich, wir; du, deiner, dir, dich, ihr;*

der, des, dem, den, die, and a particular finger had to be raised to any one of three different sounds uttered irregularly from among fifteen in all. Here, where there no longer could be question of fixed association but there had to be constantly renewed discrimination, the time for the two kinds of reaction rose to 688, 430. And from this point emerged, under progressively more difficult conditions, a very remarkable result. The thumb, forefinger, &c., were to be raised respectively upon random utterance, (5) of any *noun, adjective, pronoun, number, verb;* (6) of the name of any *city, river, animal, plant,* (chemical) *element;* (7) of the name of any *poet, musician, naturalist, philosopher, statesman* (or *general*). Here, in accordance with the increasing difficulty of identification, the time for 'complete' reaction rose from the 688 of the previous case to 712, 893, 1122; but the time of 'shortened' reaction remained practically constant, being 432, 432, 437 by the side of the 430 of case (4). There was also the notable circumstance that only from case (4) onwards did errors—of raising the wrong finger (generally as between fourth and fifth)—occur, and this always in connexion with the 'shortened,' never with the 'complete,' reaction. The errors in the different cases were respectively 10, 30, 12, 25 per ct.; where the excess in case (5) admits of sufficient explanation from the difficulty of finding words (always of one syllable) that, as sounded, might not be referred to more than one head, *e.g.*, the pronoun *sie* being in utterance indistinguishable from the imperative *sieh.*

These figures, which are startling enough, have an obvious bearing on the question whether the exercise of apperceptive function (however this may or may not be physically conditioned) makes the whole difference that has been alleged between the two kinds of reaction; also upon the question whether work of the consciously active (or actively conscious) sort is as necessary as has been supposed for the attainment of certain intellectual results. If, without first consciously attending to a particular sound (*i.e.*, discriminating and identifying it), and without then consciously deciding to put forth one particular movement rather than any of several others in response to it, the movement is, in general, found to be rightly put forth apart from such consciousness, provided only the system (call it mental or nervous) is by pre-arrangement poised in more or less determinate fashion,—why, then, the part commonly reserved for direct activity of consciousness must, surely, be allowed to be one that is by no means indispensable. But, before remarking further upon the interpretation which Münsterberg would put upon the results of his first series of experiments, let us in like manner have summary view of what he attains with his second.

II. The second research has a relation to previous experiments on Association-time, especially those carried out at Leipsic with so much care by Prof. Cattell (see MIND, vol. xi. *passim*), but is

guided by a different principle, and seeks to bring experiment *directly* to bear upon mental processes of the higher or more recondite sort. Hitherto it is indirectly, by way of calculation, bare reaction-time first discounted, that it has been sought to get a 'recognition-time,' a 'will-time,' and with these also an 'association-time'. For Münsterberg, on the other hand, the main question just is, whether the mental processes here distinguished do in any case so join on in serial order, the one ending before another begins, as to be thus separable by calculation. And he would solve it by working up experimentally from relatively simple cases of intellection to others which plainly involve judgment and will. The method of experiment was to require of two reagents, M. and R. (Drs. Mayer and Rieger), to utter alternately, ten at a time, single words in response to questions of different degrees of complexity conveyed to them by Münsterberg's utterance, in such way as that the time could be accurately measured between question and response,—by having the two utterances combined with simultaneous finger-movements that respectively closed and opened the galvanic current of the registering apparatus. In the graduated series of questions put to the reagents, the earlier ones involved nothing more than request for an associated name; but, as Münsterberg urges, this cannot be sought for under experimental conditions without implying some kind of judgment in the response, since even in the case of freest association it must really be an associate of one kind or other, and not any name whatever. Thus it is possible, for purposes of comparison, to bring what are called involuntary associations effectually into line with such judgments as obviously import choice and volition.

Beginning was made (1) with simple repetition of the call-word, yielding a mean time for M. of 403σ, for R. of 362σ. ('Mean variation' is added throughout, in proof of the care taken in averaging the thirty or forty trials made with each reagent at every stage of the experiment, but may here be left aside.) After this preliminary, the experiment went forward in a way that may perhaps be more clearly conveyed by giving at each stage some examples of the type of questions put and answered, rather than by any general designation of the different types:—

(2) Associate of 'Gold'?—'Silver'. 'Strength'?—'Force'. 'Sing'?—'Dance'. M. 845, R. 948.

(3) 'Greek poet'?—'Homer'. 'Drama of Goethe'?—'Goetz'. 'Prussian town'?—'Berlin'. M. 970, R. 1103.

(4) 'Three times four'?—'Twelve'. 'In what season of the year, June'?—'Summer'. 'Teacher of Plato'?—'Socrates'. M. 808, R. 889.

(5) 'Which more important, Virgil or Ovid'?—'Virgil'. 'Which do you like better, wine or beer'?—'Beer'. 'Which seems harder to you, physics or chemistry'?—'Chemistry'. M. 906, R. 1079.

(6) 'Among apples, pears, cherries, &c. (nine others named), which do you like better, grapes or cherries'?—'Cherries'. 'Among ten trees named, which more picturesque, lime or oak'?—'Oak'. 'Among ten colours named, which goes better with blue, yellow or green'?—'Yellow'. M. 694, R. 659.

(7) 'Most important German river'?—'Rhine'. 'Finest of Goethe's dramas'?—'Faust'. 'Your favourite French poet'?—'Corneille'. M. 962, R. 1137.

(8) 'Which lies more to the west, Berlin or the most important German river'?—'Rhine'. 'Which letter comes later in alphabet, L or the initial of the most beautiful tree'?—'T' (*Tanne*). M. 1844, R. 1866.

(9) 'Which lies more to the west, Berlin or the river on which stands Cologne'?—'Rhine'. 'Which is less, 15 or 20 *minus* 8'?—'12'. 'Which letter comes earlier in alphabet, P or initial of our emperor'?—'F' (Frederick). M. 1291, R. 1337.

(10) 'Among twelve bodily organs named, which larger, hand or what one smells with'?—'H'. 'Among twelve colours named, which brighter, blue or colour of sulphur'?—'Yellow'. 'Among twelve poets named, which lived later, Lessing or Byron'?—'Byron'. M. 1153, R. 1145.

Finally, (11) 'Which more impressive, the finest drama of Shakespeare or finest opera of Wagner'?—'Lohengrin'. 'Which more picturesque, the most beautiful fruit or the most beautiful flower'?—'Rose'. 'Which of greater importance to man, the most important application of electricity or the most important use of gunpowder'?—'Telegraph'. M. 2197, R. 2847. But here the 'mean variation' was so exceptionally large that the limits of intellectual complication with which direct experiment can effectively cope appeared to be overpassed; and, accordingly, the result was discounted.

Now, of course, the value of these results, though they seem to have been obtained with all imaginable care, must not be overrated. Münsterberg himself is the first to see what weakness there is in any of them; as, *e.g.*, especially in all those of them —(5), (6), (7), (8)—that involve what he calls a "subjective judgment of decision". Whether the subjective estimate was asked for between two alternatives only or within an indefinite range, the experimental decision was (as it had to be) made with an *aplomb* far enough removed from the hesitation of ordinary life;—as was shown, for one thing, by the disposition the reagent would immediately betray to go back upon the particular preference he had so confidently expressed. Still it is evident that, from (2) onwards, the more salient kinds of intellectual activity—these, too, carried from (7), to some considerable degree of complication — are in a way fairly represented. And in this view, not a little remarkable the results are. A free association, as in (2)—which Münsterberg here calls "unrestricted judgment of relation"—has always been readily understood

to take shorter time than such a restricted association (or judgment) as is involved in (3); while this again may take somewhat longer time than the singularised or exclusive determination of (4). But, when the subjective appreciation involved in (5) took by itself a time which approximated to that of (3), it was certainly not to be expected that it could be superimposed, as in (7), upon the work of (3) within a time, for the whole complex process, which is practically the same as that of (3) by itself. Again, while in (8) the addition of an act of exclusive choice to the work of (7) brings the time up to a figure which, for M., is almost double, it is curious to see how comparatively little the same kind of addition to (4) increases the time of this by itself. Once more, the shortening effect wrought upon (5) and (9) by such a foregone enumeration of relevant particulars as was employed in (6) and (10) is remarkable enough. Other points of interest might be noted in the figures, as, *e.g.*, between the two reagents, how R., although (after the first simple reaction) his times are otherwise pretty uniformly longer than M.'s, responds with exceptional swiftness under the peculiar conditions of (6) and (10). Most important, however, is the main outcome of the whole series of experiments, and this is—that the actual work of intellect is done in a way which cannot be represented by any summation of such elements or factors of conscious experience as subjective analysis may discern in these or similar cases of mental complication. If, wherever an 'apperceptive act' can be noted in any of the foregoing associations or judgments, it must be supposed to engross consciousness for the time being—and this cannot but be supposed, whether or not the 'act' may admit of satisfactory physiological expression—then the time-values in the great majority of the cases ought to have turned out larger, and to have been otherwise very different (in comparison with one another) from what they were found to be.

Taken together, the two researches in their different way certainly point to one conclusion—that there is no such difference between so-called voluntary and involuntary intellection as Wundt's apperception-theory (or any other like it) would make out. The effective mental work which gets itself somehow performed in these experiments of Münsterberg may be set down, in the language of subjective psychology, to activity of consciousness; but this activity conforms to no law that can in any way be traced,—or, in other words, no scientific account of it can be given. On the other hand, the experimental results do not seem to withdraw themselves from consistent psychophysical interpretation. In II., the salient feature is the comparative shortening of time taken up by the more complicated mental processes. Where there is any marked increase of time for the complex over the relatively simple, this is yet out of all proportion less than the degree of complication (subjectively viewed) would seem to require. In I., the salient

feature is the practically constant time within which intellectual acts (for they are, to all intents and purposes, intellectual) of varying complexity are effected, so soon as the performance is allowed to take place in the way called unconscious. Here, unconscious performance means that the motor result finally obtained is effected in a way that is physiologically imaginable (though in detail it cannot be actually traced). That is to say, there is understood to be a physically continuous process all the way from where stimulus is received till where, by more or less circuitous cerebral route, the terminal station of overt impulse is reached. But if the time between stimulus and reaction remains (practically) constant though the cerebral work varies as much as it must do between cases (4) and (7) of Münsterberg's first research, there must here be some overlapping of stages in the whole brain-process, such as with physical process it is not unimaginable there may be. Now the very point, it will be remembered, of the first series of experiments was to get work done which, though 'unconsciously' performed, had all the character of that kind of work which, before habit is formed through practice, consciousness alone is supposed able to effect. Where, then, as in the second research, it is a question of understanding how conscious process may go forward at a rate much swifter than could be if all the stages of conscious activity apparently involved were in serial order gone regularly through,—it lies to hand to suppose that the real causal chain (eventuating in the final movement) is a physical one of nerve-process, which, according to circumstances, may be more or less cut short.

Such is a general—very general—indication of the meaning put by Münsterberg on his experiments. The English reader will perhaps call to mind the passage in Mill's *Examination of Hamilton* where, over against Hamilton's hypothesis of 'unconscious mental modification,' and Stewart's hypothesis of fleeting conscious modification straightway forgotten, the idea is thrown out that lapsed elements in trains of association that continue effective may correspond to the opening of physical short cuts through the brain; the same mental result being thus attained directly that would otherwise be reached more circuitously with full consciousness. In Mill, the supposition, where it is made, has a certain forced effect, because in general he shows himself so little anxious to rely upon psychophysical consideration or carry it through. It is, accordingly, rather in the writings of so earnest a physiological psychologist as Prof. Bain; or of so fervent a depreciator of consciousness and all its works by the side of brain-process as Dr. Maudsley; or, again, of a thinker so firmly convinced as Mr. Shadworth Hodgson that, after *philosophical* analysis of experience, there is nothing left for psychology to do but to find coherent physiological expression for the facts of subjective consciousness,—it is in the

writings of these that the nearest English approaches must be sought to the position taken up by Münsterberg. But, as has been already said or implied, what distinguishes him from the writers named, or from any others who in this country have conceived of the physical series of nervous events as bearing the whole causal strain ('causal' understood phenomenally) of the chequered play of mental life, is just the experimental art which he brings to bear upon special questions of psychology; so that the position no longer remains open to the charge of being a barren generality incapable of proof or disproof. Or, rather, this is his first point of distinction; for the present attempt to draw attention to his work should not break off without at least mention of one other notable feature in it.

It was noted above, under II., how according to Münsterberg the demand, under any kind of experimental conditions, for even the least restricted association involved already some act of judgment on the part of the reagent. But, if in this way he made good the continuity of his experimental tests from simple up to complex judgments, it is not thus that he leaves the question (as between Association and Apperception) at the final stage of psychophysical interpretation. If his general formula is to stand — that all activity or change of consciousness must admit of being represented as change of conscious content—the explicit judging (or choosing) at one end of his experimental scale should, equally with the implicit judging at the other, bear to be expressed in terms of Association. He has, therefore, to grapple at length (pp. 123-41) with the psychological question of the exact nature of the associative process and of Thought in relation to it. It is the question which English Associationists have tried always, more or less directly, to face,—never more directly (upon a line of his own) than in the article on "Association and Thought" by Mr. F. H. Bradley in MIND xii. 354. Münsterberg's treatment is of a range and character to which no justice can be done on the present occasion, but it is specially commended to the notice of readers—for more reasons than one. As a piece of subjective analysis, it shows, in comparison with most of the English efforts, a superior grasp of the precise issues in question; and it is worked out—as the best English treatment has not always been, and sometimes has not been at all—with an eye kept steadily fixed on the physiological aspect of the case. One point only may now be noted, in this (latter) view. Münsterberg takes side with those who reduce all association to the one form of 'Contiguity,' but finds himself also obliged to go further, and limit this to the single case of 'Coexistence-in-time'. It is not clear to me that he thereby overcomes the very serious difficulty there is in getting a satisfactory physiological expression for 'Contiguous Association' (as very serious difficulty there is, in spite of what one could write, with the brave confidence of youth, in the *Encyc. Brit.*, 9th ed., art. "Association"). But the exact *crux*, as it has now long

seemed to me, of the matter I have not elsewhere seen so clearly expressed or apprehended as by Münsterberg from p. 130.

These remarks must for the present suffice. Dr. Münsterberg is fulfilling his promise of serial publication so punctually that there will be occasion enough to return upon his work. It is a work of genuine research that is all the more remarkable from being done (as I have read somewhere) without any of the official aids and facilities that belong to a higher academic status than he has yet attained. Among the psychological questions which he has most made his own—in connexion with the half-dozen or more researches he has so far published, as well as in his earlier essay on the *Act of Will*—is that deep-going and far-reaching one of 'Muscular Sense'. The decided position, after more than commonly circumspect consideration, which he takes up on this critical subject, will, it is hoped, not be passed over the next time his work is had under review.

PROF. BURDON SANDERSON ON PHYSIOLOGICAL METHOD.

By W. Leslie Mackenzie.

Prof. Burdon Sanderson's Address to the Biological Section at the last meeting of the British Association has more than a sectional interest. It is an utterance, *ex cathedra*, by one of the chief physiologists of the time—an encyclical, as it were, of physiological science, gathering up the main drifts of speculation, reviewing and resetting fundamental problems, fixing the limits of current methods and indicating in a masterly way the true direction of scientific physiology in the near future. From readers of Mind, too, the address demands consideration; for it is a serious contribution to method, to the logic of physiology; it seeks after a statement of the fundamental processes of life, and opens up new ranges of suggestion to the psychologist. The chief positions of the address I propose to arrange and consider under the following heads: principles, methods, fundamental problems and possible psychological applications.

Principles.—The principle that marks off Physiology as a science is that "every appreciable difference of structure corresponds to a difference of function; and, conversely, that each endowment of a living organism must be explained, if explained at all, as springing from its structure". This is the chief axiom of the science. Accordingly the work of the physiologist is twofold: first, to determine "the chemical and physical endowments of living matter in general, and of each of the varieties of living matter which constitute the animal and plant organism in particular"; secondly, "to determine how these processes are localised so as to constitute the special function of each structure,

and the relation between structure and process in each case". But in the application of the fundamental principle little real progress was possible till the notion of "vitalism" had yielded before the physical methods of Young, Mayer, Bernard, Helmholtz, du Bois-Reymond, Ludwig and others. At last, however, the scientific method is established: the word "vital," as distinctive of physiological processes, may be abandoned altogether, and the physiologist, unencumbered by extraneous difficulties, proceeds to his work of correlating structure with function.

Methods.—As for method, physiology has on the whole proceeded from structure to function, which is well so long as the question is of organs anatomically or histologically distinguishable. But, "inasmuch as function is more complicated than structure, the result of proceeding, as physiology normally does, from structure to function must inevitably be to bring us face to face with functional differences which have no structural differences to explain them". Thus in the eye—a never-failing source of interest to physiologist and psychologist alike—the correlation of optical mechanism with the formation of images and of retinal elements with the number of discernible objects, presents little difficulty to the physiologist; "but the method of correlation fails him from the moment that he considers that each object point in the field of vision is coloured, and that he is able to discriminate not merely the number and the relations of all the object points to each other, but the colour of each separately. He then sees at once that each cone must possess a plurality of endowments for which its structure affords no explanation. In other words, in the minute structure of the human retina we have a mechanism which would completely explain the picture of which I am conscious were the objects composing it possessed of one objective quality only, being colourless, but it leaves us without explanation of the differentiation of colour." Structure, it is important to note, means here microscopic structure as yet known to us—a limitation of some consequence. Thus also gland-cells—for example, liver-cells—may each perform the many functions of the whole organ; and here, again, "all that our knowledge of minute structure has done for us is to set before us a question which, though elementary, we are quite unable to answer". Function seems here to mean all the activities of the cell. By inference from these examples and many others like them, Prof. Sanderson reaches his first great generalisation—*plurality of function with unity of structure.*

This, once established, compels a change of method; structure is no longer an available guide. Two ways are open: either to fall back on the potentialities of "protoplasm," as if that were explanation; or, "retaining our hold of the fundamental principle of correlation, to take the problem in reverse, *i.e.*, to use analysis of function as a guide to the ultra-microscopical analysis of

structure". We thus proceed from function to structure—not certainly a new method, as witness Haller's discovery of the irritability of muscle, Bichat's physiological distinction between organic and animal functions, Heidenhain's and Langley's functional study of gland-cells, and lastly Gaskell's discovery of the anatomical differences among cerebro-spinal nerves; but a method now for the first time placed on its true scientific footing. The significance of this is that histology, like the coarser anatomy, has, so far as concerns physiology, reached a limit. "It is by different methods of investigation that our better equipped successors must gain insight of those vital processes of which even the ultimate results of microscopical analysis will ever be, as they are now, only the outward and visible sign."

Fundamental Problems.—It is outside the purpose of this paper to summarise in great detail the second part of Prof. Sanderson's address; and, besides, no summary could do justice to the grasp and impressiveness of the original. It is enough here to present the general result. "But now," says Prof. Sanderson, "no one who is awake to the tendencies of thought and work in physiology can fail to have observed that the best minds are directed with more concentration than ever before to those questions which relate to the elementary endowments of living matter, and that if they are still held in the background it is rather because of the extreme difficulty of approaching them than from any want of appreciation of their importance." Life is a state of ceaseless change. This change has two aspects: first, growth, evolution, or the *morphological* aspect, which exhibits the plant and animal world as "the unfolding of a structural plan which was once latent in a form of living material of great apparent simplicity"; second, nutrition, exchange of material, metabolism, or the *physiological* aspect, under which "this apparently simple material is seen to be capable of the discharge of functions of great complexity, and therefore must possess corresponding complexity of mechanism. It is the nature of this invisible mechanism that physiology thirsts to know." Pflüger's researches on the avidity of protoplasm for free oxygen, the hypothetical *micella* of Nägeli, the *tagma* or molecular phalanx of Pfeffer, the muscular *ino-tagma* of Engelmann, vital turgescence in plants, muscular contraction, "this marvellous concomitance of chemical, electrical and mechanical change," these all point towards one general idea, *viz.*, that the "invisible mechanism" consists of two things—a living, stable, acting, catalysing framework or channel, and a non-living, labile, acted-on, interstitial, catalysable content or stream. Further, this mechanism, itself unoxidised and unaltered, "seizes upon oxygen and stores it for its own purposes". As this storage is the sign of restitution, so the production of carbon-dioxide and water is the sign of expenditure, and thus we reach a new characteristic of living process, *viz.*, "*that it is a constantly recurring alterna-*

tion of opposite and complementary states, that of activity or discharge, that of rest or restitution". It is generally agreed that discharge and restitution (or charge and discharge) are fundamentally opposed; but with Prof. Hering and Dr. Gaskell restitution (charge, assimilation or anabolism) and discharge (dis-assimilation, katabolism) are equally forms of activity requiring each its proper stimulus. Prof. Sanderson suggests a modified formula to meet this, though he regards anabolism and katabolism rather as the interference of two regulating mechanisms than as the antagonism of tendencies in the same mechanism. But, whatever the general formula, this fundamental distinction, which carries with it a proximate definition of life, indicates a possible synthesis of the vast and growing masses of physiological detail, and if, as Prof. Sanderson seems to indicate, we are on the verge of a new "vitalism," it is a provisional and scientific vitalism, ready to be driven farther and farther away as the improvements in method make wider and profounder generalisations possible.

Applications.—The following remarks are offered as a fragmentary expression of difficulty, first, in the exact appreciation of Prof. Sanderson's main principles, and next, in framing possible psychological applications of them.

1. "If plurality of function" is to be an accepted axiom, the notions of structure and function must be reset to a wider meaning. But at once we light on possible ambiguities. Structure no longer means merely microscopic structure; yet, from the natural tendency to correlate functions, however inadequately, with known structures, microscopic structure has become the basis of all the chief doctrines of physiology. How much this tendency has affected the nerve cell one may learn from Lewes's criticism in the *Physical Basis of Mind*. On the other hand, if structure is an invisible mechanism that no histology can reveal, does not *unity* of structure become a pure postulate? Does it not seem as if, having first fixed the limits of the assumed unity, we sought then to correlate the known plurality of function with our assumption? Prof. Sanderson carries us back a step when he demonstrates plurality of function in the ultimate tagmata or molecular systems of muscle. But the question still presses—May we properly regard as unity that which has many functions? The question is perhaps "trifling," but it indicates a real vagueness. By ordinary usage, function is the activity of a definite organ for a definite end; but in the most general form of living matter, function and metabolism mean almost the same thing. Does function, then, include all the activities of living matter—chemical, electrical, mechanical? Is secretion of bile really a function of a liver cell, or only, as Dr. Lauder Brunton seems to indicate, an accident of metabolism? If, then, we must limit function to certain aspects, or certain results of metabolism, on what ground are we to settle real *plurality* of function?

2. The notions of motor and sensory may now be subsumed under the more general notion of constructive and destructive metabolism (Gaskell, *Journal of Physiology*, vol. ix.). It seems hardly legitimate to suppose that motor and sensory processes, though opposed in their results, are merely opposing phases of central nervous activities; probably they are each equally anabolic and katabolic. To them we may add inhibitory processes, which are understood to be anabolic. But anabolism and katabolism of nerve-centres, it is hardly yet possible for the psychologist to use as a guide in re-constructing the physical concomitants of mental phenomena. For physiologists as yet offer no consistent account of the inter-relations of motor, sensory and inhibitory processes. Thus certain sensory stimuli are inhibitory (say) of reflex actions; Dr. Mercier (*Nervous System and the Mind*, p. 79) "by a series of exclusions" finds that inhibition is "maintained by centres which exercise this function concurrently with others"; Dr. Broadbent looks upon inhibition as a normal tension of central system and terminal organs; Dr. Gaskell finds peripheral inhibition of muscle or gland, anabolic, and central inhibition of one centre by another probably means anabolism in the inhibited centre. Others, following Gaskell, use "inhibitory stimulus" to imply that certain afferent stimuli may increase anabolic activity in the centre they pass to (Head, *Journal of Phys.*, vol. x., p. 283). But from the turmoil of physiological speculations there seems to be emerging a richer, fuller and more definite conception of nerve-action. Afferent processes, hitherto vaguely connected with the action of sensory centres, are now divided into sensory proper, the concomitants probably of central katabolism, and inhibitory, the concomitants of central anabolism. So efferent processes are motor or katabolic, and inhibitory or anabolic. Similarly with the interactions of nerve-centres: the supposed inhibitory effect, for example, of the frontal lobes on lower brain centres means anabolism in the centres inhibited. If such a generalisation can be established, obviously the psychologist may push the correlation of mental and physical beyond the mere localising of centres or the numbering of nerve cells and fibres. It would be rash here to do more than indicate one or two possibilities. New acquisitions, sensory and motor, may conceivably coincide with central anabolism; reproduction of these, like complementary after-colours on Hering's hypothesis, with katabolism; the nerve-centres, acting like secondary electric batteries, store under one stimulus what they are ready to give out again under another. Similarly, attention would coincide with a compound process; for, physically, attention, for instance of the senses, means the arrest of distracting motions, the refusal of sensations and at the same time the issue of motor energy in special directions. Voluntary motion and control, emotional arrest of ideas or actions and many other mental occurrences, may have their physical concomitants reduced to terms of anabolism and katabolism.

To take now an example from the senses. What colour is to the mechanism of the eye, *timbre* is to the mechanism of the ear. The analysis of *timbre* into a fundamental vibration and its harmonics, reduces the objective condition to variations and complications of one process—"one objective quality"; and Dr. Stanley Hall's theory of the rods and cones in relation to wave-lengths of light, aims at reducing the "differentiation of colour" to the same fundamental process as the differentiation of number. In neither case, however, do we get beyond the threshold of a solution. The "vital" processes in ear and eye are at least as important as the purely physical conditions. Probably the conflicting theories of colour-vision have arisen from the all-prevailing tendency of physiology to be content with purely physical results. Hering's varieties of "visual-substance" will have analogies in the other senses, and even when, if ever, sensation generally is reduced to appreciation of "one objective quality," there will still remain the correlation of special sense activities with central or peripheral metabolism.

So little developed, however, so little "done into science," are the generalities of psychological physiology, that psychologists (cp. Bain, "Mind and Body," MIND, viii. 402) have found it almost impossible to establish a plausible concomitance even in the *number* of mental acquisitions and the number of possible nervous embodiments. Those things, Prof. Bain points out, are not the easiest to recall that require the least number of coherences; on the contrary a multitude of contiguous details is a help at once to acquisition and to recollection. Hence even high numerical estimates of cell- and fibre-embodiments become less than adequate to the acquisitions even of an ordinary mind. With the help, however, of Prof. Sanderson's "plurality of function" and an analysis of nerve-matter parallel to his analysis of muscle, we can multiply almost indefinitely the number of available nerve-elements. If "close and open order" of molecular systems in muscle form a basis for different actions of one excitable tissue, it is legitimate to make a similar supposition for nerve cells, another excitable tissue. And if to this we add the possible variations of function according to the variations of stimuli and nutrition, the number of nerve-cells and fibres becomes a secondary matter; we must regard the simplest *visible* structure as "itself made up of an arrangement of units of a far inferior order of minuteness". Such units for muscle Prof. Sanderson has indicated; psychologists and "professed philosophers" would be grateful for a parallel analysis of nerve-cells and fibres.

3. The possibility of speculations like these justifies another remark. Psychology is itself a "reverse method" of physiological analysis, and an admirable instance of such analysis from the psychological side is Dr. Mercier's *Nervous System and the Mind*. In the "invisible mechanism" of the grey matter, the

psychologist requires physical concomitants to match the refinements of his analysis. These mechanisms it is the business of the physiologist to verify; if he fail, his failure counts for nothing against the psychical facts. It may be, as in Dr. Mercier's speculations on the necessary functions of the structureless intercellular matrix, that many suppositions are as yet unwarranted by neurological research; but Dr. Ross's criticism of Dr. Mercier's speculation as without "any justification" (*Brain*, Jan., 1889) is hardly legitimate, if Dr. Ross means to limit nerve-function by known structure. Functions of cell or inter-cellular matrix must be limited by the requirements of the case, and Dr. Mercier may fairly reply that the only physiology of nerve-matter that suits the purpose of psychology requires the assigning of certain functions to the matrix, and that the neurologist must provisionally accept the hypothesis or else explain otherwise the facts in hand. At the least, the detailed correlation of physical and mental has not yet reached the stage when verified fact can be everywhere opposed to hypotheses; at the most, it is an opposition of one hypothesis to another.

EXPERIMENTAL CERTAINTY.

By L. T. Hobhouse.

The doctrine that all reasoning is from particulars, if not to Mill the centre of his system, has at least been made such by his critics. Certainly this much might be said, that the *raison d'être* of the third book—the central part—of his *Logic* is to lay down criteria by which we may judge when such reasoning is valid. To Mill emphatically Logic is a criticism of reasoning. It is not merely an investigation of the general nature of the reasoning process, but is primarily concerned with this question, 'By what test, if any, can we distinguish true reasoning from false?' Now, if we can find such a test, we can then hope to do something with the crude material of observation; if not, there is no scientific statement to be based on any number of observed facts. In this way the two questions of the basis and the test of reasoning hang together, and it is in this relation that we wish to investigate them.

Can we then reason in the strict sense of the word from the 'particular' facts of observation? That is, can we base universal statements upon them? If so, when? Can any general principle be laid down to which all such inferences must conform? These are the questions before us.

Four (or five) canons have been laid down by Mill which claim to supply us with the required test, and hence to assure us that any inference conforming to them may be held truly universal.

I do not propose to discuss all the five in detail. The Methods of Residues and Concomitant Variations really resolve themselves into cases of the Method of Difference. The Method of Agreement is, indeed, based on a different principle, but is confessedly inconclusive when taken by itself. The Joint Method involves the two Methods of Agreement and Difference.[1] We are left, therefore, with the Method of Difference as the real subject of discussion, and we have to ask how far (if at all) a rigid application of this method enables us to base an universal assertion on a particular fact. In the first place, does it enable us? In the second place, if it does, how can it?

It is only fair to note as a preliminary that Mill is perfectly right in his plea that the ordinary scientific experiment is conducted on this method, and that any single successful application of it will give practical certainty. The chemist who 'isolates' a substance, the physiologist who determines a brain-area, and the physicist who measures a constant, one and all base their results on this method, and make that result the basis of fresh applications of the same.

Probably no one would deny that the method bears some resemblance to the ideals of experimenters. But opponents would direct their attack on its claim to give theoretically perfect universal inferences from the facts of observation. Let us see how far such criticism goes.

Two lines of attack have been adopted. The method has been criticised as *impracticable* and as *fallacious*.

I. Of the first criticism, let us acknowledge at once that it contains a great deal of truth. A perfect instance of the method would be symbolised—

$$\left.\begin{matrix} BC & ABC \\ ef & def \end{matrix}\right\} \text{whence A is cause of d.}$$

Now this conclusion rests, first, on A being absolutely the only change introduced. If any other change has crept in, our conclusion is baseless. How, then, can we ever be sure that A is the only change introduced? For example, I stimulate (A) a certain brain area of a monkey (BC = the nervous organisation in a quiescent state) and observe a convulsive twitching (d) of the hand (cf = the permanent attributes of the hand). Now how do I know that A was the only change introduced? Possibly the very means I used to stimulate this area may have affected some other spot, and that affection may have been the real cause. And this, in fact, is precisely what a physiologist would have to fear.

But here, I think, the answer of an apologist for the method is

[1] It should be noted that Mr. Venn's statement of this Joint Method (in *Empirical Logic*) is a very clear improvement on Mill's.

clear enough. The very fact, he would say, that the physiologist does, and is compelled to, fear such interference is the proof that our method lays down the *ideal* of proof. More than that it cannot and does not profess to do. All it says is, If you conform absolutely to this ideal you will get certainty, and the nearer you approach to it the nearer to certainty you get. The method, then, is the ideal or type of proof, and it is for the operator to conform to it as nearly as he can.

But here a deeper objection may be raised. However careful our experimenter may be, it might be said, he cannot shut out the great mass of changes going on throughout the universe. To fulfil the requirements of the method he has to take two observations, and this cannot be done at the very same time and place. Let him bring them as near as he possibly can, there have been changes in the interval other than that which he introduces.

To appreciate the force of this argument we must consider, first, that all sorts of unforeseen and unexpected results do come about from disregarded changes in the general environment. Minute changes of temperature, for example, or (as in an interesting instance quoted by Mr. Venn) the mere change in the level of the floor due to the movements of the experimenter, may make all the difference to our experiment. So that the objection is not unpractical. But, further, even if it were, it would still be a good criticism on the claims of the method which we are considering. It points to the real limitations of the method. If, that is, the method claimed to give an universal truth as the result of a single experiment *without any independent knowledge whatever of the nature of the facts observed*, that claim could not stand. Such a claim would suppose that we came to our experiment destitute of all knowledge of nature. Then why should not that position of the fixed stars, for example, with which the introduction of A happened to synchronise, be the real cause of d? The answer to this is double.

The first and obvious answer is, We know that it is not so. But this is pre-supposing previous knowledge; it is deducing from previous experience. Undoubtedly it is. And it should be noticed that Mill recognised this as much as any of his critics. "It is true," he says, "this similarity of circumstances needs not extend to such as are *already known* to be immaterial to the result. And in the case of most phenomena we learn at once, from the commonest experience, that most of the co-existent phenomena of the universe may be either present or absent without affecting the given phenomenon," &c. "Already known," that is, of course, from previous experience.

If this is so, then we cannot get on without deduction. Perhaps not, but that does not destroy the value of the method. Thus, in symbols, the method would now give us—

BCPQRS. . . .	ABCPRTU. . . .
e f m n o p. . . .	d e f m o v w. . . .

By previous experience P Q R S T U . . . immaterial.
Hence A the sole material change.
Hence A the cause of d.

This is just as much an addition to our knowledge. It gives a new universal relation of A to d, an universal not contained in our previous knowledge.

But, now, how was this previous knowledge obtained? If the method is the sole ground of universal truths, and if the employment of it involves universal truths as already known, how are we to make a beginning? This brings us to the second part of our answer.

Let us notice in passing that as an *argumentum ad hominem* against Mill this criticism is nugatory. For Mill consistently admits Simple Enumeration as a valid form of inference, though liable to misuse, and he might very fairly say that the general assumption involved in any application of the method rested on an induction of that character.

But I would not meet the objection on that ground, because I think there is a real point in it which another form of answer will bring out. Let it be granted that we can make A (our change) as definite as we please. Now, the question is, How do we know that it is not some other change P that is the real cause of d? Let us, for simplicity, suppose that P is the only other change in question, though of course there are, in fact, all sorts of changes going on. Let P be the rotation of the earth on its axis, an instance which I take because it cannot be eliminated by any form of experiment. Then let B C be a basin of mercury in communication with an upright tube, and let A be the exhaustion of air from the tube, d will then be the rise of the mercury in it. Then d follows on the introduction of A. But suppose it was really caused by P. This would have to mean not that it was due to the mere fact of the earth's rotation, for that had been going on all along and made no difference, but to some new phase of that rotation. Now, unless the phases connected with the rise of the mercury were very common, the probabilities would be against any such phase synchronising with A. By repeating the experiment we can clearly prove that they can not be common (for we can have the mercury quiescent as long as we like), and that they always synchronise with A. It is clearly improbable that there should be any such phase of P always falling at the moment at which we introduce A. By a few repetitions we can raise the improbability indefinitely. Of course, as this improbability increases, so does the probability that A is the cause.[1]

[1] And this, in fact, is the process employed by any experimenter, if he has reason to suspect any 'periodicity' independent of the change introduced by himself. He *repeats* his experiment, *varying* the period until he thinks he has eliminated the chance of a coincidence.

But, we shall be asked, If we once admit probabilities, what becomes of stringent proofs, universal inferences and the rest? It is clear that chance does play its part in our conclusions, and this must affect the validity of our method. Does it render it quite nugatory? And, what is still more important, does it lead to the conclusion that our inferences and beliefs as to co-existences and sequences are destitute of principle?

1. Let us first compare the Method of Difference with the *Inductio vulgaris*, the simple enumerations of ordinary life. This form of induction also rests on chance. It might chance that all the ballot-balls I draw were black and yet there were some white ones in the box. Clearly enough, the universal conclusion that we draw from a number of instances is based on the improbability that we should find so many coincidences without some connexion. But what sort of connexion? Of this we are told nothing. For example, an enormous number of vegetables are destitute of any apparent power of locomotion. When I say apparent, I am speaking of what appears to the non-botanical eye. The non-botanical observer accordingly generalises and says, No vegetables have the power of locomotion. Now what was the nature of his evidence? Symbolising, we may lump together the set of characters which he means to express by the term vegetable as A, and say that he asserts an universal relation between them and d, the absence of locomotive powers. But now what has he omitted? He has taken no account of the possible existence of any number of facts besides those which he observed, any one of which may be the real ground of d. Symbolising, he had A B C D E . . ., d e f . . . over and over again, and he never tried to eliminate B C D E. Hence while there was a high probability of some connexion between A and d, there was no probability whatever of A's being the cause of d. Any one of the other facts might be the whole cause, and A and d might for instance both be effects of B; hence in some new instance B might produce A, while 'counteracting causes' might substitute something else for d. Accordingly the microscope reveals that many minute vegetable organisms have the power of locomotion.

I pass over the greater ease with which the Method of Differences can show the probability of its conclusion, and the higher degree of certainty which it can obtain, and I attend only to this point of contrast. Both involve the Law of Chances; but where as under Simple Enumeration the probability obtained is merely of some connexion, upon the Method of Difference it is the probability that A is the cause of d. Thus, even if we are reduced to probabilities, we know in this case precisely *what* is probable.

2. But how does the introduction of Chance affect the general character of our reasonings? Does it or does it not reduce inference to a more or less confident expectation? I think two considerations will refute this suggestion.

In the first place, we may for a moment regard chance as a

kind of surd in our inferences. Granting chance eliminated we proceed in safety. I shall try to show later on that upon this assumption we can reason from particulars, and that this Method of Difference represents one type at least of such reasoning. Taking facts as they are, we cannot of course always infer with security. So far as we do infer at all it is upon the tacit or explicit assumption of the Law of Chances. But given that law we may still infer rightly or wrongly. We may be reasonable or unreasonable, and the aim of Logic, as I understand, is to lay down the criteria of what is reasonable, and this, as I shall try to show, the Method of Difference has in part done.

But, in the second place, chance is not altogether a surd. It expresses not merely an expectation of our own minds, but a law that holds true of all nature. Taking the case of the experiment which we discussed above, when we say that it is infinitely improbable that any phase of P is the cause of d, we mean that we might draw such inferences an infinite number of times without coming wrong. And, speaking generally, whenever I say an inference is probable, I must mean that if I always went upon such an inference, I should find myself right more often than wrong. The point is that the Law of Chances implies a certain distribution of the forces of nature. We should not say that it was equally probable that a penny would turn up heads, or that it would turn up tails, unless we believed that, in a large number of trials, the number of heads and tails would approximate to equality. For it is clear that we do not exact absolute equality in any given finite number; and it is equally clear that it is no use talking about an infinite series. But I will formulate the law in this way, that, if in any series of trials, the numbers of heads and tails do not turn out equal, a longer series can always be found, in which the numbers do approximate nearer to equality. And I say that, if we tried this, and found it fail, we should give up saying that the chances of heads and tails were equal, and should say that one was more likely than the other. Now this assertion of convergence to equality is an assertion, inexact and incapable of being made more exact, of the way in which facts happen. It is an assertion about the order of Nature, and it is as such that it is one of the bases of our inferences.

It may be said that I have dwelt too long on the part played by the Law of Chances, since in the actual processes of science every experiment does really involve, not merely probabilities, but fully established conclusions. This is true, and it is as working upon such results that scientific methods have their value. But these results themselves have to be attained somehow, and somewhere or other they rest upon probabilities. To show the real scope of any inference, then we do best to strip it, as far as possible, of antecedent knowledge, and exhibit it as resting immediately, not indirectly, on the Law of Chances. My

aim has been to define by this means the true character of a scientific proof. Upon a certain assumption it establishes what follows. This or that is probable or improbable; then the same degree of probability attaches to this or that other assertion. When we have said that chance enters into an inference, we have not said all about the matter. We have stated one part of the case only. We have still to ask whether, given that so much is chance, the rest is valid inference or invalid, good reasoning or bad?

Thus, so far as the practicability of our method is concerned, we see that it is applicable only upon certain assumptions—assumptions either based on previous experience, or on that truth holding of Nature, as a whole, which we call the Law of Chances. Upon such basis we have seen that the method must work, if it is to work at all.

II. But does it work at all? Or is it, when applicable, fallacious? Granted all the implications that we have seen to be necessary, does the method help us in any way? The contrary view has been upheld by Mr. Bradley, who maintains that the claim of the method to take us from particular to universal is wholly unfounded. Let us consider one or two of Mr. Bradley's criticisms in detail.

(*a*) Mr. Bradley's first criticism is that the method really starts from universals.

"The fact is *made* a particular fact by the presence of that, the absence of which is postulated beforehand by these formulas. A universal judgment is *made* universal by just those attributes which are pronounced indispensable in the material for these Methods. The moment you have reduced your particular fact to a perfectly definite set of elements, existing in relations which are accurately known, there you have left the fact behind you. You have already a judgment universal in the same sense in which the result of your 'induction' is universal" (*Principles of Logic*, p. 335).

Really, this criticism appears to me to explain the validity of the method rather than to impugn its value. It is precisely because to assert a particular sequence is, so far as that sequence is definite, to imply an universal, that reasoning from particulars is possible at all. And it is precisely the comparison that makes the sequence definite. To discuss the whole question adequately would involve going into Mr. Bradley's theory of judgment, for which I have no space, but perhaps I may be able to show, in a few words, why Mr. Bradley's criticism appears to me to miss the mark.

His instance is one which falls under the Method of Agreement. I am concerned with the Method of Difference, and will, therefore, venture to substitute an illustration of my own. I stimulate the vagus nerve of an animal, and observe the consequent inhibition of the heart's action. Now where was the

'universal' from which I started? It is the fact that this stimulation was the *only* change introduced—that it was perfectly definite. This definiteness (if I understand Mr. Bradley aright) is what makes it universal.

Now, I ask, what does this phraseology come to? What does it mean more than that this act of stimulation has certain definite general attributes? And what does the word 'general' mean, but that in these attributes it precisely resembles other acts of stimulation? Despite its 'general' attributes, it is an act performed here and now before my eyes. That is what I mean by calling it particular, and when I say I can reason from particulars, I mean that I can reason from the facts that I observe.

Mr. Bradley appears to mean something different by 'particular,' *viz.*, that which particularises those attributes of the fact before us which are not general. In that sense of the word it is clear enough that you cannot reason from particulars. The particularities of the thing would be precisely that from which you could not generalise. But the particular fact, in the sense of the fact which I observe, has general attributes; it is, as Mr. Bradley would phrase it, at once universal and particular, and, therefore, we can reason from it. Our first judgment is—'This fact, having the attribute A, was followed by that fact D, the concomitants of A not being followed by D, apart from A'. Our inference is—'Any other A will be followed by D,' or, in the form of an universal judgment, 'A as such produces D'. I shall go further into the grounds of this inference presently. At this moment I wish to insist only that our premiss is a particular fact of observation.

(*b*). Mr. Bradley's second criticism is that the Methods do nothing but eliminate a part of a content already general. Now in a sense the content from which we start is already general, *i.e.*, given all the antecedents again as they are now, we shall have the consequent. But the antecedents as we first observe them may be so indefinite that we can make no general statement at all. To go no further than the instance which I took above. Let us suppose I am shown a dead frog which has been laid open, and am told that the vagus has just been stimulated. If I know nothing of physiology this last remark makes no impression on me; I observe that the heart is motionless and I put it down to the death of the creature. Here then I have the universals which one instance gives me—the deadness of the frog and the stimulation of the vagus as conditions, and the stillness of the heart as consequent. Now these conditions are utterly vague. There is a whole mass of them, and though I know that if the whole mass is repeated the consequent will be repeated, I do not know whether it needs the whole, or only some one collocation of the conditions, or, if only one, which it must be. If I made any selection at all, it would probably be a wrong one. Now introduce the element of comparison which the Method of

Difference requires, and the case is altered. I have only to wait and watch a moment or two and the heart begins to beat again. Then if I reintroduce the stimulus, it is once more stopped. I argue—'Stimulation of the vagus inhibits the heart'. What then have I done? From the vague complex of antecedent conditions I have by comparison isolated one which is as definite as possible, and connected with it a definite effect. For a vague universal involving many known, and possibly more unknown, conditions, I substitute one that is precise and definite. I do not see how any method could do more, inasmuch as every 'particular seqence,' *i.e.*, every sequence that we observe has, in one way or the other, a universal character. We always know that, given all the antecedents as they are here, all the consequents will be as they are here. But what we want to do in Induction is to connect the elements together, and discover which belongs to which. We always know that the whole mass coheres somehow, but we want to trace the fibres.

(*c*) This, I think, will help us in discussing Mr. Bradley's third criticism, which I venture to think the most valuable of all. I confine myself again to the Method of Difference. Mr. Bradley points out that if I have

A B C . . .	B C
d e f . . .	e f

I cannnot at once say that A is the cause of d universally, but only in this one case. Here, I think, Mr. Bradley has put his finger on the most important limitation of our method. The neglect of it is due, as Mr. Venn has pointed out, to our loose use of symbols. We speak of A B C as a set of antecedents, as though A, B and C could exist, and have precisely the same effects, whether in combination or in isolation. But clearly, if we know nothing whatever about the nature of our facts—and that is what the use of symbols always supposes—we can make no such assumption. We cannot proceed by simple addition. We cannot tell how the action of A may be modified by B or C.

This must limit our method in scope, but I shall try to show that it does not do away with or even lessen its utility. The instance just discussed is sufficient to show that we gain some universal knowledge, though not all that we may require, from a single application of the method. We have seen that by it I make the universal judgment—'Stimulation of the vagus inhibits the heart.' Yes, says Mr. Bradley, but so far as you know, only in dead frogs. Quite true, but the method has already taught me something, *viz.*, that that which stops the heart in a dead frog is stimulation of the vagus. I prove that this stimulation is necessary to the inhibition. But by repeating similar experiments I can do more: I can vary the animal, or I can vary the conditions, *i.e.*, I can do it to an anæsthetised frog, instead of

a dead one. These cases prove that the death or the specific organisation of the animal makes no difference. As long as it has a heart and a vagus nerve the connexion holds. These fresh instances are simply cases of Method of Difference reversed. B an C are changed, and no difference appears.

Originally, then, I have

A B C D . . .	B C D . . .
m n o p	n o p

Whence, I say, that, under the conditions, B C D . . ., A is the cause of m. Now I can vary B and C. They make no difference, and hence I can say, under the conditions, D. . . . and whatever may be the other concomitants, A is the cause of m. In this way I may (and the scientific man does) eliminate every number of possible conditions.

My conclusion, then, is that the Method of Difference presupposes either existing deductions or the Law of Chances. Its conclusions cannot be more certain than these presuppositions warrant. On the other hand, starting from such basis as they afford, it is a true account of the method by which we reason to fresh results. Its material is the concrete fact of observation, and in that it discerns what elements are in universal connexion. A single application of it will establish this connexion as holding under the conditions here existing. Repetitions of it will eliminate such of these conditions as are unessential.

IS THERE AN *A PRIORI* KNOWLEDGE?

By J. Solomon.

In the interminable dispute about the nature of knowledge, and especially about the views of Kant on that topic, no phrase stands out more clearly than '*a priori* knowledge' as at once the flag of one party, the red rag of the other. Yet, in my opinion, the two factions are less profoundly at variance than they suppose. It is possible to be a thorough empiricist and yet to feel under no common obligation to Kant. Such at least—I admit the unimportance of the fact—is my own attitude. To the phrase '*a priori* knowledge' strictly construed I feel an abhorrence not less than Mill, or Prof. Case in his recent work, *Physical Realism*. The combination of words is, in the strict sense, to my perception at least, unmeaning: 'knowledge' is of things; and '*a priori* knowledge' is equivalent to 'knowing things without knowing them,' without having come into any sort of contact, direct or indirect, with them. How such an absurdity can be found tolerable, since we have ceased to assume that the Creator esta-

blished for all time a harmony between the mind of man and the universe, may seem at first an impossible problem. Really, however, what the self-styled adherents of '*a priori* knowledge' establish is something very different from such an unmeaning figment. Knowledge is the mirror of the world to us; but it is also the result of a process by us. This process may be studied either by analysis of its results and comparison with that from which they have been derived, or an attempt may be made by psychological inspection, either of others or introspectively of ourselves, to reproduce its steps. To some the former, to others the latter, seems the more hopeful mode of examination; according to the sides men take they speak of rescuing psychology from the web-spinning of metaphysics or of purging metaphysics from alien empirical psychology. Neither side has really cause to abuse the other; both have done good service and taught us much. But the point here insisted on is, that both agree that knowing is a process, in which we, our self, our mind—phrase it as one will—takes an active part. This being admitted, it is asked, What is it that our mind does, and how do its processes end in producing a reflexion of the world? The answer can only be that the world must be of such a nature that mind, operating as it cannot but operate, is yet successful in reproducing it. To put it another way, mind cannot proceed a step in the construction of a world without making some assumptions about it. If some or all these assumptions are untrue, then mind is baffled either at the very start or at some subsequent point. These assumptions are what Kant and his followers most unreasonably and tactlessly (for, as we have said, the phrase was sure to produce violent remonstrance) call '*a priori* knowledge'. As has been said above, the assumptions are not knowledge, but conditions, which objects and the world at large must obey if they are to be knowable and conceivable. Those who asserted '*a priori* knowledge' had always to meet the practical question how they could truthfully attribute to children and the uneducated an understanding of, and a belief in, certain highly abstract propositions. The fact is, of course, that the uneducated do not *know* these propositions, but—what is very different—practically assume them, as analysis shows, by trusting to the natural working of their mind to bring out the truth of things. With this view the latest and not least vigorous impugner of Kantian doctrine, Prof. Case, agrees. He is practically at one with Kant in asserting, against the association-school, that knowledge is not something done *for* the mind; that the mind is not a mere plate on which the world gradually pictures itself by presentation, primary and secondary (if we may so describe the presentations or images evoked by association). I do not, of course, intend to make light of the gulf between the opinions of Prof. Case and those of Kant. Between the two views, that the immediate data of experience are a formless manifold (as Kant holds) and that these data are related objects

of a synthetic sense (as Prof. Case holds), there is perhaps an abyss that cannot be bridged. Nor am I at present concerned to deny that the Kantian theory of the data (easy as it is to attack) may still possibly be right. But where Kant and his repeaters are certainly *not* right is in speaking of that which distinguishes formless sensation from persistent and coherent knowledge as itself knowledge, and knowledge of that impossible kind designated by the contradictory epithet '*a priori*'. The mind by certain processes works up its primitive material (which may be as slight as Kant thinks, or as solid as Prof. Case holds); it finds its results verify themselves, and it thus acquires the right to call the assumptions on which alone it could work laws of the natural world: but to say that it 'knows *a priori*' the world, to this limited extent at least, 'knows *a priori*' that it has such laws, is the perfection of unreason and self-contradiction. Without the 'verification' just spoken of, the mind would not 'know' the laws at all. Kant himself felt this, but evaded its full force and misled his disciples by admitting it in a phrase of characteristic awkwardness. Though, said he, these *a priori* known laws apply to the world, yet they apply only to the world of experience, of phenomena. But this is, in fact, to admit that the laws—however much *a priori* in their origination in a conscious mind—are only *known* by the confirmation of them supplied by experience; as, in fact, otherwise nothing can be known.

An illustration of the above remarks is supplied by a recent work, which, modestly disclaiming to discuss metaphysical topics, supplies a better basis for such discussion than most of the metaphysicians have done. Dr. Venn commences his *Empirical Logic* by some chapters on the postulates of the subject. These are that the world is of such and such a nature. Dr. Venn pursues his subject with much acuteness and elaboration, and shows that the postulates about the 'logician's world' or 'inferrible world' are more numerous than might be supposed, and capable of distincter and closer specification than they have received. With his merits in detail, however, I have nothing to do. I only call attention to the broad, sober and eminently reasonable way in which he grasps the fact that, while we cannot but think of our minds and the world as different, yet between mental powers and the world there is an inevitable correlation, of which the details may be indeed variously apprehended, but the general truth must be allowed by all. Hegelians, of course, will refuse to recognise this explanation, as they would refuse to recognise the difficulty it purports to explain. Deny that there is any world except that existing in our sensations and the thoughts to which these, when connected together, give rise, and you naturally need no explanation of the correlation of the mentally-constructed world and the really existent world. I do not set myself to refute their theory; it is one rapidly losing hold of the minds of men, and it does not seem likely to revive. It is enough

to say—as has been said often—that men have no more ground for believing in the existence of other men—other 'minds,' as Hegelians would say—than they have for believing in the existence of an independent world generally: one may add, with Aristotle, in a somewhat different sense to his, *διάνοια αὐτὴ οὐθὲν κινεῖ*; meaning that, even if an unchanging world could be regarded as a mental or imaginative picture, it is impossible so to regard a varying world like our own, and, above all, that most important class of variations, those in our own state. I do not add that Hegelians can give us no account of the relation of God—whom they by no means regard as unknowable—to the world, of which He is at least the author in some fuller sense than we ourselves: on this point it would be unfair to press the school, because, though they show no superabundance of modesty in assailing the problem, those who might accuse them of failing in it certainly do not pretend to be very successful themselves. But with regard to their other error, that, so to speak, of locating the whole material world in our own minds, there one may impugn their reasonings: first, by pointing out the self-contradictory consequence of their blunder, that they must end by 'locating' other minds within ours; next, by pointing out its origin—namely, a blind and one-sided insistence on the truth in which they, the Kantians, and those who are empiricists agree, that without the co-operation of mind and thought and will we should never read the independent world with the detail, accuracy and depth with which we do read it. Now this, it may be repeated, implies, not an origin of the world in ourselves, as the Hegelians say, not an *a priori* knowledge of it in at least some of its features, as the Kantians say, but a correlation of the World with Mind and its processes, which Thought assumes and Experience verifies.

The word 'assumption,' so often used in this paper, calls for some remark. It may be said that the theory above stated merely substitutes for '*a priori* knowledge' something only one degree more credible—namely, '*a priori* belief'. It will be said that, in admitting general and highly abstract propositions to be incapable of apprehension by children and the uneducated, I am cutting the ground from under the theory that such propositions are 'assumed' or 'believed' by them. Those who have read Prof. Case's book with the attention it deserves will be sure to remark that he at least gives no countenance to the idea that such propositions are either understood or assumed by those who may be, in a sense, said to apply them. And with regard to the illustrative chapters of Dr. Venn to which I have referred, it may be remarked that these expressly purport to state a 'logician's' postulates about the world, and therefore assuredly not the postulates of children and the uneducated, who are certainly not logicians. My statement, however, was not that these postulates are 'assumed' or believed, or even consciously

recognised by such rudimentary students, but that they are 'practically assumed' by them—that their reasonings, when considered, will be found to conform to them. Why they should conform to them, is another question. I only say that the conformity precedes all experience and makes it possible, and that it cannot, therefore, be a deduction from experience. To what it is really due, is an important question, to which more than one answer has been or may be given. It may be said—I borrow the expression from a friend—that 'the laws of nature have so long been affecting our inherited organisms that we cannot help thinking by them as automatically as the lungs move to inspire and expire, or the heart contracts and dilates to circulate the blood'. This would be an evolutionist theory of thinking, and, as such, would in the present day meet probably with ready acceptance. It is not, however, supported by such statements—undoubtedly true as they are—as that men only gradually arrived at the apprehension of the laws which logic now recognises as essential to thought, that Plato contravened the law of Contradiction, that Aristotle was ready to admit exceptions to the law of Uniformity. For the question is not, How and by what stages did men arrive at a conscious apprehension of the essential laws of thinking as distinct from mere imagining? but, How came men to think at all, to obey those laws which only after centuries or millenia were discovered to underlie thinking? It may be that 'the environment' gradually forced them into such obedience, though I am unable to conceive how. To me it seems rather that men thought (and therefore obeyed unconsciously the laws it took them so long to formulate) through an original impulse inevitable to all beings that had become conscious of themselves. On the word 'impulse' I desire to lay stress. It might be supposed that, when it was once admitted that experience could not have taught men how to think, since without thinking there could be no experience of the requisite kind,—it might be supposed, I say, that there was no other alternative but to allow that men thought by 'instinct'. 'Instinct' is a kind of 'impulse,' and it might be urged that between the answer just given and my own there is no difference. But of 'instinct,' beyond that it is an 'impulse,' we understand nothing, though we may surmise or even prove its physical genesis. On the other hand, 'an impulse inevitable to beings conscious of themselves' is not so hopelessly indefinite. A being conscious of itself is conscious of its wants, and conscious of the limitations to the satisfactions of those wants. Of these limitations it naturally strives—at first with a purely practical interest—to form distinct ideas, to shape them into personalities and invest them with powers, as it has come to recognise itself shaped and invested. It could not express at first either its own motive or its own processes: it falls into endless blunders of detail; notably, it makes that stupendous mistake of finding living beings every-

where which has led anthropologists to describe earliest thought as 'Animism'. But it already holds and obeys, though unknown, the laws of logic, at least in its practical inquiries. The last proviso is perhaps necessary, because the well-known distinction of 'speculative' and 'practical,' if it could have been made intelligible to the primitive man, would probably have had its meaning inverted. To us truth is the end of Speculation; Practice, though it certainly cannot afford to disregard truth entirely, ostentatiously disregards much of it, and, in fact, its most interesting sections. But in Practice, and in Practice alone, was the uncompromising severity of truth felt by the primitive man; in his practice we must look for his logic: his speculation, of which he had no lack, was a tissue of imaginative, incoherent dreams, with no real significance or importance, exercising his fancy and satisfying his emotions, and not needing or pretending to do more.

Such is the explanation I should give, if asked how men come to think logically, or as I should prefer to say, come to think at all. For thinking is just the search for the systematic and permanent, and the object of its search conditions its procedure, making it what afterwards came to be described as logical, and implies a belief in a world the characteristic of which is to possess, nearer or further from its surface, system and permanence. Man did not commence this search, and by this method, because he knew 'the game was worth the candle,' still less because he knew the rules of the game, but simply because he had to do it in order that he might live. And now, to leave what has properly been an episode, I may perhaps be allowed to repeat, without opposition, what it was the primary object of this paper to establish, that philosophers are within measurable distance of admitting by agreement that, though '*a priori* knowledge' is a contradiction, yet without an '*a priori* something' there would be no knowledge, without, that is, the 'practical assumption'—not belief in or recognition—of certain fundamental characters in the world to be known.

V.—CRITICAL NOTICES.

The Critical Philosophy of Immanuel Kant. By EDWARD CAIRD, LL.D., Professor of Moral Philosophy in the University of Glasgow, &c. 2 Vols. Glasgow: J. Maclehose & Sons, 1889. Pp. xxiv., 654; xix., 660.

In these volumes Prof. Caird has fulfilled the promise which he held out in his Preface thirteen years ago of completing his view of Kant's philosophy by a consideration of the second and third *Critiques*. He has been better than his word, for he has recast the whole of his previous volume, and has embraced in his survey the *Religion within the Limits of Mere Reason*, as well as a variety of subsidiary treatises. He may fairly claim that what he now offers us is an organic view of the Kantian thought in all its ramifications, and in its various stages or aspects. The labour and knowledge which have gone to the writing of these two massive volumes are so great that anyone must shrink from the attempt to review them in a few pages. An attempt must be made, however, to indicate the general character of the book, and to comment perhaps on some of its interpretations.

In deference to some of his critics, Prof. Caird has restated and modified some of his positions; more especially, he tells us, he has been led "greatly to extend and modify" his view of the Principles of the Pure Understanding. But, on the whole, the standpoint of the new work remains the same as that of the earlier *Philosophy of Kant*. It is very lucidly stated in the Preface: "I have attempted to show that there is an unbroken continuity in the movement of Kant's thought, and that the lesson of his philosophy as a whole is definite and self-consistent. *This lesson, however, he did not himself fully understand.*" The last sentence, which I have taken the liberty of italicising, stamps the character of Prof. Caird's exposition. It is repeated in slightly varying forms of expression from chapter to chapter, and sometimes almost from page to page, so that if certain sides of Kant's thought are set in a strong light, while others are left in shadow, the reasonable critic has no right to complain that he is misled as to the relative prominence of the various elements in Kant's own mind. Prof. Caird frankly admits, indeed impresses upon us, that much of his interpretation is rather inferentially involved in Kant's thought than consciously held and taught by him. Kant's saying that the advance of time often enables us to understand a thinker better than he understood himself is expressly appropriated to his own case (ii. 630). Kant's, we are told, is "an argument which cancels and reconstitutes the imperfect premisses from which it starts," but "Kant himself never quite realised the full bearing of his own work, or the incon-

sistency of the end of it with the beginning" (i. 459). Under the head of Ethics we are told again that "here, *as in all other parts of his philosophy*, Kant seems to combine two inconsistent points of view" (ii. 254). The duty of Kant's interpreter, therefore, it is argued with much force in the Preface and Concluding Remarks, is "to detect a consistent stream of tendency which, through all obstruction, is steadily moving in one direction" (i. p. x.). Or, in other words, the growth of a doctrine is its criticism; so that we have to read Kant's meaning "first, in view of his own mental development as shown in his successive works, and secondly, in view of his influence on the subsequent history of philosophy" (ii. 630). In thus emphasising the standpoint from which the commentary is written, I do not mean to question the legitimacy of the method followed; but Prof. Caird has, I think, acted wisely in making this as prominent as he has done throughout his volumes. For, as different views may be taken of the legitimate growth or development of a doctrine, such a method, if unexplained, is apt to lead to controversies which are eminently unfruitful, and which have no visible end.

The introductory chapter on "The Idea of Criticism" is intended to state "the problem of Criticism in general, without reference to the peculiarities of Kant's statement," or, what comes to the same thing, to formulate the position of "a consistent critical philosophy". It is thus a further key to Prof. Caird's method, and in some respects a statement by anticipation of his ultimate results. It is a very thoughtful and carefully expressed argument, on which the reader will do well to return after working through the rest of the book. Criticism is here described broadly as the regress which leads us to formulate the preconditions of knowledge. The source of Criticism is ultimately found to lie (where Kant placed it) in the modern "antinomy between the principles of physical science, and that unscientific consciousness of spiritual reality which is expressed in religion and morality". Its result is to show that the world of science is an abstraction so long as it is unrelated to a conscious subject; so far from matter explaining spirit, "we must say that even matter itself cannot be fully understood except as an element in a spiritual world".

The account of Kant's precursors in modern philosophy is considerably shortened in its new form. On the other hand, the careful account of Kant's pre-critical writings, which was a feature of the former volume, is extended to more than twice its previous length, and embodies all the copious recent research on the subject in Germany. Prof. Caird distinguishes three periods in Kant's mental development. The first of these, during which he is a dissatisfied adherent of the Wolffian philosophy, was brought to a close in 1763 by "three essays, which may be regarded as Kant's declaration of independence". These essays are those on *The Sole Ground for a Demonstration of the Being of*

God, on *The Evidence of the Principles of Natural Theology and Morals*, and the *Attempt to introduce the Conception of Negative Quantity into Philosophy*. In the last-named, the distinction between logical negation and real opposition led Kant to the conclusion that the causal connexion, inasmuch as it is beyond the scope of the laws of identity and contradiction, must be given in experience. At this stage of his career, therefore, he approximated, in this as in other points, to the position of Locke, not having yet learned Hume's lesson that sense can give no real connexion. Kant's second period was a short and transitional one, marked by a sceptically-coloured empiricism or positivism, which finds expression in the curious essay *On the Dreams of a Ghostseer as illustrated by the Dreams of Metaphysics* in the year 1766. In this, says Prof. Caird, we have "a curious anticipation of the critical philosophy on a lower level of speculation". Kant's third or Critical period may be said to dawn about the year 1768-9, and to give clear evidence of itself in the *Dissertation* of the year 1770. A separate chapter is devoted to the development of the Critical Philosophy in the eleven years between 1770 and the publication of the *Critique of Pure Reason*. "The year 1769," says Kant in one of his recently published *Reflexionen*, "brought me great light." The idea of space as an *a priori* form had already been reached in the essay on *The Distinction of Regions in Space*, published in 1768, and in the following year Kant was engaged in formulating the positions which appear in his inaugural *Dissertation on the Form and Principles of the Sensible and Intelligible World*, and which are in great part (though with certain important exceptions) identical with the doctrine of the *Æsthetic*.

After the Introduction (running to 226 pages) comes the First Book, dealing with the *Critique of Pure Reason*, and occupying the rest of vol. i. and the beginning of vol. ii., 570 pages in all. The first chapter of this, which treats "The Problem of the Critique" in connexion with Kant's own Prefaces and Introduction, strikes one as a very masterly and well-balanced statement. It opens with a frank admission of the different views that may be taken of the Critical Philosophy and supported by *bonâ fide* quotations from Kant's own works. It is even allowed that "the conclusion to which the *Critique*, as a whole, brings us is one which coincides, in the main, with the results of Scepticism. For while all the *a priori* possessions claimed for the mind are, in a sense, vindicated; while the *a priori* forms of perception and the *a priori* conceptions of the understanding are both proved to have objective validity, and even the ideas of reason are shown to have a necessary function in relation to the knowledge of objects; yet they are all conceived to expend their usefulness on experience, *i.e.*, on the knowledge of objects which are merely phenomenal: so that nothing seems to be left to bring us into any relation to things in themselves" (i. 230). But while this is so,

stress is laid—and quite fairly laid—on the fact that the *Critique* "gets a different meaning, according as we contemplate it as a whole in itself, or as a part of a wider plan which, from the first, was present to Kant's mind, at least in its main outlines". And in this connexion Prof. Caird summarily dismisses the ridiculous misrepresentation of the *Critique of Practical Reason* as an afterthought on Kant's part. There can be no reasonable doubt that the object which Kant had in view from the outset was positive, not negative; the negative criticism was only a means to clear the ground, to make room for belief. Kant's original object was, as Prof. Caird expresses it, "the emancipation of the self, and also of the other super-sensible realities from the conditions under which they must be brought, if they were objects of experience" (i. 244). But if the result of Kant's most elaborate work is a conclusion so widely divergent from Prof. Caird's view of a consistent Critical philosophy, and if, moreover, Kant himself, as Prof. Caird says, never abandoned his "imperfect premisses," but to the end held as stoutly to these results of the first *Critique* as to any of his ethical conclusions, then it becomes a question whether it is sufficient simply to indicate this line of thought at the outset, and to leave it substantially without further exposition beyond a passing allusion to its existence. It becomes a question whether there might not have been a gain in clearness, if a consecutive exposition of Kant's scheme of the world had been given first, with all its imperfections and (if you will) incredibilities on its head, but with these sunk as far as possible, left without comment, till the turn of criticism came. Such a reconstruction of Kant's own mind, with its mingling of very homespun dualism and glimpses of far-reaching speculation, may, perhaps, be impossible; yet one would suppose that, after so much exercitation, Kant must have formulated to himself a view of the world, which is, at least, statable in words. Such a presentment, if studiously fair, would of itself have brought to light the incongruous elements in the statement, and would have made it more intelligible how thinkers who sometimes differ so widely from one another should agree in claiming descent from Kant. Such considerations suggest themselves somewhat forcibly in connexion with Prof. Caird's treatment of the unity of the self. He points out in the last chapter of the Introduction how the passage from the *Dissertation* to the *Critique* involved a change from the assertion of the unity *in God* of all interacting substances (including the knower and the objects of his knowledge) to the assertion of the unity of the world *for the self*. Now the immediate, and for Kant by far the most important, result of this Copernican change of centre, was the reduction of his universe to a purely subjective world, a world of perceptions which, in their leading determinations, have, it is true, an objectivity or necessary validity for all similarly constituted beings, but which are not the world of real things.

Instead, however, of bringing out this point, Prof. Caird at once transforms Kant's subjective or anthropocentric unity back again into a theocentric unity by the statement that, "in self-consciousness, there is contained not merely the consciousness of the subject as opposed to the object, but also the consciousness of a unity which, while it involves that opposition, at the same time transcends it". In the consciousness of self is involved also the consciousness of "the universal unity or centre which all knowledge implies; in this sense the consciousness of self and the consciousness of God are essentially bound up with each other". Now I am not arguing here against this doctrine as a substantive philosophical position; but, seeing that Kant himself, as Prof. Caird admits, always held by an individual noümenal self acted on by an independent noümenal object, the unity of apperception being only the formal unity of the individual's thought, it might have been better if Kant's own theory had been explicitly developed by his commentator before introducing so complete a transformation of his position and his whole habits of thought. But it is too late to debate a question of method like this. The attentive reader is, at least, able to gather from Prof. Caird's admissions and incidental statements those features of Kant's theory which make it, as it stands, so widely different from Hegelian idealism.

The most interesting passages in the chapters which follow are those which deal with the synthesis of imagination and its relation to the intellectual synthesis through the categories. On this point Prof. Caird, if he has not shifted his position, has at any rate greatly modified his former statement. Whereas in the *Philosophy of Kant* we seem to pass at a step (as perhaps in consistency we ought to pass) from the chaotic manifold of sense to the categorised objects of experience—objects constructed out of such manifold by the unity of apperception bringing the categories to bear upon it and arranging it in the forms of space and time—there is now full recognition of Kant's use of perception, or mere perception, as a middle term between the unsynthesised manifold of sense and the categorised unities of experience or cognition proper. This is the point emphasised by Dr. Stirling in his *Textbook to Kant* with such damaging results to the coherence of the Kantian scheme of things; 'crude perception' is the name there given to the first result of synthesis. The first synthesis of the units of sense, says Kant early in the 'Analytic,' is "the mere effect of imagination, a blind function of the soul, of which, though indispensable if there is to be knowledge at all, we are seldom even conscious. But to bring this synthesis to *conceptions* is a function which belongs to the understanding, a function by which it for the first time puts us in possession of knowledge or cognition in the strict sense of that term." "The synthesis of the imagination," he repeats below, "gives us as yet no knowledge." Now there is a great temptation to fix upon

certain expressions of Kant's which seem to treat the imaginative and the intellectual syntheses as different aspects of the same act; but in view of his repeated statements to an opposite effect, this cannot be maintained to have ever been Kant's real meaning. It is useless to deny that Kant supposes the elements of sensation to be put together into "distinct images of perception" (in Prof. Caird's phrase), "and ultimately into one imaged continuity of a world in space and time," by the immediate action of the subject upon the sense-manifold, without the application of the categories, and that only at a later stage there supervenes upon this world the conscious synthesis of the understanding through the categories. At times Kant appears to speak of this unconscious synthesis as yielding us, not objects, but only "a blind play of images, *i.e.*, less than a dream," or again, as giving only "a chaos of appearances filling the soul, but for us as thinking beings as good as nothing at all". In a letter to Marcus Herz, written in 1789, he compares our mental state without the categories to the animal consciousness: "If in thought I make myself into an animal, I can conceive sensible ideas to carry on their regular play in my soul, seeing that they might still be bound together according to an empirical law of association, and so have influence upon feeling and desire. . . . But then I should not through these ideas have knowledge of anything, even of that state of myself which the ideas imply" (i. 313). But at other times Kant talks freely of 'objects' as presented in mere perception, without their being referred to the functions of the understanding (that is to say, without their being categorised); and ultimately, though the judgment is, according to his own theory, the specific badge of categorised objectivity, he speaks in the *Prolegomena* of judgments of perception as distinguished from judgments of experience in the strict sense of that term. Hence the dilemma so mercilessly insisted on by Dr. Stirling. Prof. Caird recognises it and states it thus, in almost identical terms: "Kant recognises that an individual object as such cannot be presented to us in sensation, but only by means of a synthesis of imagination, which retains the elements that have been given in sense and combines them into one whole; a whole, therefore, in which all the parts are already taken out of their existence as successive feelings, and qualified by their relation to each other. . . . In other words, the object of perception I have before me is already determined by the conceptions under which, as it is supposed, it needs to be brought in order to determine it as an object of experience. All that remains to be done, therefore, when we bring together the conception and the perception, is to recognise that the latter is already qualified by that universal relation which is abstractly expressed in the former. . . . Already, therefore, in a perception which can be subsumed under the schematised conception, that qualification by conception must have taken place which the theory supposes the judgment to give by

so subsuming it" (i. 438). Prof. Caird's way of meeting this difficulty in a sympathetic spirit is (1) to emphasise the epithet blind or unconscious as applied to the imaginative synthesis, thus binding Kant down to those terms which describe the result as a floating of associated but unfixated images across the field of an animal consciousness, and denying *in toto* Kant's right to speak of 'objects,' much less of 'judgments,' in connexion with mere perception. (2) Founding on Kant's undoubted statement in a note to the 'Analytic,' that it is "one and the same spontaneity which in the one case under the name of imagination, in the other under that of understanding, produces conjunction in the manifold of perception," he argues that the difference between imagination and understanding is analogous to that between the unconscious or implicit use of a principle in particular cases and the formulation or conscious realisation of the rule upon which we have already been acting. The consciousness of the self and the consciousness of a categorised object as distinguished from the self arise in one and the same act; but just as the experiences of the merely perceptive or merely conscious subject were all, in Kant's phrase, "*capable* of being united" with the apperceptive unity of the 'I think,' so they were also, Prof. Caird argues, in virtue of that very fact, conformed likewise to the conceptions through which that unity acts. There is, as it were, a species of pre-established harmony[1] between perception and conception. "In other words, the synthesis of imagination involved in perception must be of the same character as it would have been if imagination, instead of acting on the data of sense *prior* to the synthesis of the understanding, had from the beginning been guided by the understanding to produce an image of an object according to a definite conception or rule supplied by itself" (i. 366). The images of perception are therefore prepared beforehand for their subsumption under the categories; or rather, their subsumption is an awkward mode of expressing our becoming conscious of relations which were implicitly involved in our perceptions all along.

This goes far, I think, to put an intelligible meaning into some of Kant's at first sight hopelessly divergent statements, but I question whether it relieves the real stress of the difficulty, as that existed for Kant, and as it has been signalised by Dr. Stirling. For we must remember that, to Kant, the categories, being *a priori*, are a subjective apparatus; and if that is so, the interposition of the blind synthesis of imagination only pushes the difficulty a step further back. Granted that in the synthesis of the understanding we consciously apply a category to determine

[1] Kant himself, in a passage quoted by Prof. Caird (i. 356), transfers this Leibnizian idea to the relation of perception and conception, but its application to the specific relation in question appears to be made by Prof. Caird himself.

a particular object or event because the object or event has already been fashioned in accordance with the category by a preceding unconscious synthesis of imagination, precisely the same question arises in regard to that first unconscious synthesis—the question, namely, as to the reason for the imposition of the category. Was that first operation a subjective synthesis conferring connexion and necessity of connexion upon data in themselves destitute of such connexion, or was it a response on the part of the subject to certain peculiarities attaching to the sense-data themselves, as these come from the side of the object? This may not be a difficulty in the system which Prof. Caird develops out of Kant, but it was a real difficulty to Kant himself, and, if pressed, is found to be fatal to his whole subjective scheme.

In the chapter on the 'Postulates of Empirical Thought' I would first note a statement which gave me pause when I met it before in Green's Lectures on Kant, and which is repeated here—*viz.*, that a complete knowledge of the conditions of the possibility of an object is equivalent to the reality of that object. "If we do not know all the conditions of the possibility of an object, we do not know its reality; and if a new perception enables us to discover such reality, it is by enabling us to complete our thought of its possibility. Kant, however, speaks as if that thought might be completed, and yet the object be conceived as merely possible so long as it is not presented in sense" (i. 598). Kant is thus blamed here for making what seems to me an obvious statement of fact. "If we could know the whole conditions of an object apart from perception," Prof. Caird proceeds, "we should know its reality." If this means that we should know what, *if experienced by way of sense-perception*, would constitute its reality, it is surely an identical proposition. But if it means that such complete knowledge of its conditions is equivalent to the actual appearance of the object in immediate experience—in sense-perception, if it is a sensible object—then I do not see how we can intelligibly make such an assertion. If it be argued that the only complete thought of an object is the divine thought, and that that is necessarily conceived as creating its object, which, by merely being thought of, is present to the divine consciousness as if in perception, then I reply that the argument is beside the point, because by defining the divine thought as perceptive or creative we make it quite different from what we understand by thought in the accepted and only intelligible meaning of the term. We only know what thought is in our own case, and in that case no amount of thinking brings us a step nearer perceiving; and it is only in perception, or at least in immediate experience, that we come into contact with reality.

Of the much-discussed 'Refutation of Idealism' Prof. Caird gives a luminous and eminently satisfactory account, which, one

would fain hope, might be accepted as a ruling on the subject for the future. "Immediately, and in the first instance, what Kant is attempting to show is that inner experience is so dependent upon outer experience that the denial of the reality of the latter must carry with it the (to Descartes impossible) denial of the reality of the former. . . . What he is speaking of is the relation of two empirical objects, or rather of two aspects of our experience." There is no hint, therefore, of a relapse into ordinary common-sense dualism, as if the permanent, in opposition to which we become conscious, were a thing in itself. "Yet it is true that ultimately the dualism in experience is in his mind connected with the opposition between the Ego in itself and the thing in itself; for the latter is 'the ground' to which the materials of experience are attributed" (i. 634-8). In the remainder of the chapter, Prof. Caird instructively points out how Kant's view of inner experience varied between the First and the Second Editions of the *Critique*. He regarded it at first as distinct from outer experience and co-ordinate with it, but came eventually to look upon it, not as an independent sphere of knowledge, but rather as a reflexion upon outer experience—a reflexion, it may be added, in which the distinction of outer and inner first arises. "The consciousness of the internal object is the consciousness of the process in us as sensitive beings by which the consciousness of the external object is realised. The former is, therefore, not a new independent consciousness added to the consciousness of the object, but simply a correction of the latter in so far as it leaves out of account the process *a parte nostra* by which it is realised. . . . To contemplate our experience as *inner* experience is simply to enrich our outer experience by bringing in the thought of its relation to feeling in ourselves as sensitive subjects" (i. 632-46).

The relation of the 'Dialectic' to the other two parts of the *Critique* is very skilfully put by Prof. Caird in his earlier chapters. In the 'Æsthetic,' Kant parts company with Leibniz through the generic distinction which he draws between perception and conception. The 'Æsthetic' is thus the "statement of a dualism which is partly overcome in the 'Analytic' by the reduction of sense and thought to elements or factors in empirical knowledge. But in Kant's view, this dualism cannot be completely overcome; and the 'Dialectic,' therefore, shows us thought recoiling from the imperfect result of its result in experience, and setting up for itself an ideal which with such materials can never be realised" (i. 285). This is further connected with a change which came over the idea of the noümenon as Kant pursued his speculations. "For though in the 'Æsthetic' and 'Analytic' the phenomenal character of the objects of knowledge is proved, in one sense of the term phenomenal, *i.e.*, in the sense that they are essentially objects of our consciousness, still the ultimate reason for separating noümena or things in themselves from these objects is given only in the

'Dialectic,' where it is shown that there are *ideas* which arise in connexion with experience, and which even in a sense are its presuppositions, but which yet are not realised in any of the objects of experience" (i. 231). The opposition of phenomena and noümena first appeared in the *Dissertation* as the contrast between the world of sense-perception and the world of conception or pure thought. Things in themselves are plainly, therefore, for Kant at this stage, the unknown objects which cause our sense-affections; if we could know these objects without the intervention of space and time our knowledge would be no longer phenomenal but noümenal. When we advance to the *Critique* the shadow of subjectivity has passed over the conceptions of the intellect also. The categories are found to be limited to sense, and the noümenon becomes, therefore, completely unknowable by human intelligence, though it is still retained (and was retained by Kant to the end) as the cause of our sense-perceptive experience. In this acceptation of the term, the noümenal world is not necessarily more 'rich and strange' than the phenomenal, of which it is in fact the double. Its only feature is its inaccessibility, and if this line of thought is followed out, the noümenon ultimately shrinks into the impossible abstraction of relativism, a thing related only to itself. Prof. Caird does little more than indicate this relativistic strain in Kant's thought, and himself develops the idea of the noümenon in another direction. The noümenon is first of all the object of thought as opposed to the object of sense, but when Kant departs from this position in the *Critique* and treats the conceptions of thought as empty apart from a perceptive reference, he virtually, says Prof. Caird, criticises both sense and thought in view of a higher ideal. To do so, and to speak in this connexion of an intuitive or perceptive understanding "is to compare our dualistic mind, with its two disparate faculties of intelligence and sense, with the idea of a mind in which this difference does not exist or is overcome" (i. 187). In the second instance, then, says Prof. Caird, the noümenon becomes for Kant "simply the object of an intuitive understanding". The view which Prof. Caird reaches, as the consistent outcome of this second position is that objects are phenomenal because they are not in themselves *res completæ* but imply a self for which they exist, and that the self is the noümenon of which objective existence is phenomenal. "The Kantian conception of nature as that which exists *for* spirit" leads directly to "the Hegelian view that it exists only as the manifestation *of* spirit" (ii. 90). But, as he says, this "is in a sense to invert the use of the conceptions of noümenon and phenomenon which we find in Kant". This Hegelian view Prof. Caird takes to be the real outcome of the 'Dialectic'. Rational Psychology is the attempt to determine the self as a *res completa* without taking acconnt of its relation to the objective world; in Rational Cosmology, "the converse attempt is made to complete the circle or syllogism of the objective consciousness, and to de-

termine the objective world as a *res completa*, without taking any account of its relation to the self" (ii. 63).

Little space is left, unfortunately, for comment upon Prof. Caird's account of Kant's other works, though, as covering ground untraversed before, it is, in some respects, the most interesting part of the two volumes. But the lines on which it proceeds will be readily understood from the foregoing. The introductory chapter on "The Relation of Theoretical and Practical Reason" is excellent both in itself and for the light which it casts backward over Prof. Caird's own exposition. The line of criticism followed in dealing with Kant's ethics is concisely indicated in the closing paragraph of the chapter: "A process of reflexion upon the practical consciousness, similar to that which we have applied already to the speculative, will lead us to recognise . . . that, as in our *theoretical* consciousness we are not simply taking in information about a world which is alien and external to the self, but really coming to a consciousness of the self *in* the object, so in our *practical* consciousness we are not simply forcing the self upon an external and alien world, but determining and developing the self in an element which is essentially related to it, and which, therefore, cannot resist it, except so far as that self is at war with itself" (ii. 170). In other words, Prof. Caird condemns Kant's negative view of the moral life in its relation to sense and passion, in which are reproduced the characteristics of Stoicism. At the same time, he recognises that the permanent value of Kant's ethical work lies just "in the firmness with which he grasps the essential antagonism of spirit and nature in the moral life". Kant, however, sets desire entirely over against the moral will, so that any volition motived by the desires or passions is treated as an enslavement of the moral personality. Over against the desires he sets the pure self-determination of reason as the true source of moral action. Now, as Prof. Caird points out, this is so far true, inasmuch as any particular desire is inadequate to the universal of the self; and, accordingly, if the desire be universalised—if the self be identified with it—the result is dissatisfaction and a division of the will against itself. But, on the other hand, the pure self-determining reason is necessarily a blank, so long as it abstracts from all desires; it has no content but those desires. What morality involves, therefore, is not, as asceticism teaches, the extinction of desire, but "the negation of each particular when taken *by itself*, and the restoration of it through the universal. In other words, it involves that each element of life should be regarded merely as an element, which owes its value to its place in an organic whole determined by one principle; and this, of course, involves that it is not to be willed irrespectively of the other particular elements, but in relation to them" (ii. 215). In the same connexion, the Formalism of Kant's ethical principle is discussed—the impossibility, that is, of deducing from it the particular rules of moral action—and the same

idea of moral action as constituting an organism or system is brought to bear upon Kant's proposal to test any individual maxim by universalising it. The rules of morality cannot be treated as so many independent and equally absolute laws. "When we regard the particular rules of action in the concrete, we find that we can universalise *no* such rule without contradiction. . . . To make either property or life an absolute end is to raise a particular into a universal, to treat a part as if it were the whole. But the true moral vindication of each particular interest cannot be found in elevating it into something universal and absolute, but only in determining its place in relation to the others in a complete system of morality. And in such a system there cannot be an absolute subordination of any one interest to another, but rather the different interests must alternately give place to each other" (ii., 88-9).

Kant's third formula, which sets the moral end in the realisation of a 'Kingdom of Ends' is treated by Prof. Caird as an advance upon the first two, in so far as it is a recognition of the fact that man as a moral being is essentially a social being; but by treating this kingdom as merely possible Kant falls back, it is argued, into the one-sidedness of a merely subjective morality. Prof. Caird's chief criticisms deal with this aspect of Kant's teaching. He emphasises strongly the social character of morality and the moral solidarity of man with his fellows. Kant is said to have separated *Moralität* from *Sittlichkeit*, and thus to have stereotyped in his system what is essentially a transitional moment in the history of morality. Social observance is prior to individual morality, and if the moral consciousness breaks away from its first inadequate realisation, it is only to reconstitute a more satisfying social order. The very existence of the State as a compulsive power is adduced as fatal to the principle "that the individuals, as self-conscious beings, are law and end to themselves *apart* from all relation to others. It implies that there is a positive relation of self-conscious beings to each other *prior* to the negative relation which they have as individual persons. But if this be admitted, the community of men with each other becomes the precondition of their independence in relation to each other; and this means that, in the individual person as such, the universal or rational life is not realised" (ii. 355). Kant's treatise on *Religion within the Limits of Mere Reason* connects itself most closely with his ethical works, and in his view of the church as a *Tugendbund*, or society for the promotion of goodness, there is a certain breaking-away from the attitude of moral isolation to which he elsewhere apparently condemns the individual in his endeavours after virtue. But much of his peculiar treatment of religious doctrines is traced by Prof. Caird to the subjectivity of his ethics.

In Kant's ethical treatises the dualism of the system appears as the opposition between desire or nature in man and reason or

man's true essence. In the *Critique of Judgment* we return to the theoretical consciousness and the relation of self-consciousness to the world as an objective system of things. Bearing Kant's ethical results in mind, we may say that the third *Critique* attempts to mediate between nature and freedom. It tries to indicate how the system of mechanical necessity may after all be fundamentally related to the free self-consciousness of which it seems the absolute antithesis. Prof. Caird's exposition and criticism, extending to nearly 150 pages, is of the highest value, and will be welcomed by students everywhere. It will be understood that he seeks to give an objective significance to principles which, as treated by Kant, are merely subjective or principles of reflexion. Thus the sense of beauty, in which we *feel* an adaptation of objects to our faculties which we cannot prove, is taken as a forefelt harmony of the world with the intelligence, and therefore as corresponding to the idea of an intuitive understanding. Attention may be specially drawn to the thoughtful pages in which Prof. Caird discusses Teleology as the problem which science hands over to philosophy. Finally he quotes with great effect against Kant's dualism his own view of the history of humanity in his *Idea for a Universal History in a Cosmopolitan Point of View*. In this little treatise Kant treats all the hardships to which nature exposes the human animal and also the selfish passions of man himself as the very instruments of his education as a moral being. But it is in this last capacity alone that man can be treated as the End which Nature has in view; hence Nature seems in this to work out the ends of Freedom, and if so, it is no longer possible to uphold an absolute dualism between the two. Kant thus ends in "an Optimism which, as it were, absorbs and does away with an immediate Pessimism" (ii. 556).

It would be out of place, I think, as well as plainly impossible, to discuss what may be called the philosophic thesis of these volumes in a short notice dealing with them (and that insufficiently) in their relation to Kant. I hope no divergences of opinion which I have indicated on certain points may obscure the importance of Prof. Caird's book, which is in many ways the culmination of the long English endeavour to assimilate Kant. It is the result of a study of Kant, such as perhaps no Englishman will again undertake, and is in every way a thorough and masterly performance. If any regret mingles with the gratitude with which we receive from Prof. Caird this long labour of the spirit, it is that so much philosophical power should have been expended upon educing a consistent theory from Kant, when, if independently applied to the working out of a philosophical position, it might have appealed to a wider audience, and had a more direct influence upon contemporary thought. "At each step of Kant's work," says Prof. Caird, "there is the possibility of a twofold interpretation of it" (ii. 153). Now if that is so (and

I should be the first to endorse the statement) I confess to a doubt whether Kant can ever be made widely effective as a philosophical organon. So much labour has to be devoted to historical explanation, and to the qualification of every statement made, that the consistent theory detached from his writings is, in the end, adumbrated rather than fully worked out and established on its own merits. But there is a time for everything; and now that Prof. Caird has fully unburdened himself on Kant, let him give us that "complete treatise on Natural Theology" which he says in one place (ii. 128) would be required to develop the argument summarised in a few of his paragraphs. There are Gifford Lectureships enough in Scotland to furnish the appropriate occasion, and they could not be put to a better use.

ANDREW SETH.

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(1) *L'Art au point de vue sociologique.* (2) *Éducation et Hérédité.* Étude sociologique. Par M. GUYAU. Paris: F. Alcan, 1889. Pp. xlvii., 387; xvi., 306.

In these two volumes we have the last fruit of an active but prematurely ended literary life. Guyau, so we learn from the excellent introduction to the first of the works by M. A. Fouillée, was but 33 years old when he died. Yet, by completing these volumes shortly before his death he has managed to leave behind him a fairly clear outline of a philosophical system. They form a needed complement to his earlier writings, more particularly *L'Irréligion de l'Avenir*, briefly noticed in MIND xii. 143. We are now able to see that he was for reconstituting religion, metaphysics, ethics and æsthetics, by introducing the sociological point of view, or, as M. Fouillée has it, by showing the sociological idea under each of these. As will at once be recognised, Guyau, in making this attempt, was on the foremost wave-crest of our new scientific thought. He had seized with avidity and assimilated the evolutionist's doctrine in its bearing on psychology and morals. He was fascinated with the biological speculation that the individual organisation is itself a society, made up of constituent cells, with their respective psychical concomitants. Life and social life thus came to him to mean one and the same thing. And since the social constitution becomes more distinct as the life ascends, it seemed to him to be the first business of the new philosophy to discover the social element in human thought, feeling and effort. In this way he was led to regard religion as being in its essence "a sociological phenomenon," an extension to the universe and its principle of those social relations which bind men together. Similarly with metaphysics, which, indeed, in Guyau's scheme, is hardly distinguishable from religion. And in these two posthumous volumes he carries the same conception into art, into morals—which last he had already discussed in a separate work, *Esquisse d'une Morale sans Obliga-*

tion ni Sanction—and into education. A brief examination of these last of his writings will prepare the way for an estimate of the value of Guyau's central conception.

The volume on Art is a most suggestive and delightful work, well meriting a careful perusal by every lover of art quite apart from its peculiar philosophic base. The author writes with knowledge, with critical judgment and with a certain ardour which is appropriate in the preacher of a new constructive gospel. And this message has its inspiring and even its solemnising character. Others before Guyau have pointed out the essentially social character of the æsthetic feelings. He goes much beyond this, and regards the whole function of art as a medium of transmitting, a means of socialising, human emotion. In the appreciation and enjoyment of art the individual loses himself, and at the same time most fully finds himself in the life universal. It is the mission of the artist to aid this social expansion and harmonising of feeling to the utmost, and thus art assumes a leading *rôle* in the processes of social evolution. Such a view, as might be expected, leads to a grave and dignified treatment of the subject. Art for art's sake, art for the artist, art for an artistic clique—such maxims are all equally erroneous. Art for society, for the furthering of social solidarity and the perfecting of the social life—these formulas would rather seem to represent the truth of the matter.

The interest of the book lies in the freshness and the ingenuity with which this idea is elaborated in detail. More particularly it is the author's conception of the social function of the artist, the social function of the critic and the essentially social content of all art which will best repay a careful examination.

The proposition that genius is power of sociability looks a little paradoxical at first to those who have studied the moods of the great. Guyau was too much a man of reading and culture not to recognise this, and he sets to work in a very energetic fashion to recommend his paradox. The poet, it is true, may not be in particularly close sympathy with existing society: none the less, as poet, he embodies a preternatural intensity of sympathy and sociability. And his poetic effort, his creation, has its impulse in the craving for a new world of living beings with whom as his own spiritual progeny he can fully sympathise. This calling into existence of a new world is not, however, a purely personal matter, subserving the artist's individual delectation and nothing else. It is, at the same time, a sociological phenomenon. The poet, by the very fact of his ideal creation, is social regenerator; for to present the idea of a higher state of things is to excite an impulse towards the realisation of this. Here it is evident we have a view of the artist which brings him rather confusingly near the religious reformer or prophet and the philosophic moralist. In connexion with this presentment of the artist as regenerator of the community, Guyau says some striking and

instructive things as against M. Taine and others on the whole subject of the relations of the artist to his environment. If the great man is conditioned by his *milieu* he is much more than a mere reflector of its spirit and ideas. He is not explainable by heredity and education, but represents in its most striking and impressive form nature's tendency to "accidental" variation or modification of faculty. Thus he "modifies the social and intellectual environment, he is not himself the pure and simple product of the environment". And the influence of the environment becomes less and less marked as civilisation advances.

The contention that the critic is called on by his office to represent in a special way the graces of sociability may seem hardly less paradoxical than the other proposition just dealt with. Yet our author has much to say in support of it. He takes the view that all criticism is interpretative. "The ideal critic is the man to whom the work of art suggests the largest number of ideas and emotions, and who afterwards communicates these emotions to others." Corrective or condemnatory criticism has a very humble part assigned to it. Guyau seems to ignore the fact that the public is beset not only and not so much, perhaps, with men of genius as with persons of mediocre talent or something even less, and requires a good deal of warning-off if they are to find the road to the ennobling creations of true genius.

The new sociological conception of art is applied finally to the content and organisation of the work of art itself. The subject-matter of all art is life, and more particularly ideas, feelings and volitions. This view manifestly exalts the expressive as distinguished from the formal side of art. The object of the work of art is to excite sympathy with the artistically presented manifestations of life. Antipathy, by the way, is a quite subordinate effect in art, and is introduced merely to heighten the feeling of pity by contrast. Now life in itself is individuality, and we can only sympathise with individual personalities. At the same time the merely individual would have no permanent art-value. The characters of art, the heroes of the poet, are social, and appeal to us on their social side, whether, Guyau adds, rather naïvely, this sociality is seen in defending or in attacking society. The great characters of art, moreover, are not merely individual but human types, and when they represent the man of a particular epoch and society are properly social types. The double tendency in art indicated by Realism and Idealism is dealt with thoughtfully in the light of the general conception of art. Since art is to depict life, intense and varied, it must be realistic. And our author traces in an interesting way the development of the modern psychological and sociological romance as a movement which aims at embracing a larger area of reality. At the same time he is careful to separate himself from the contemporary school of present fiction, and his examination of the latest *soi-disant* scientific, experimental or physiological realism in literature is not the least capable part of his work.

The second volume is in some respects still more remarkable than the first. It is at once a treatise on sociology, ethics and pædagogics. It is doubtful whether among all the ardent evolutionists who have had their say on the moral and the educational question anyone has carried forward the new doctrine so boldly to its extreme logical consequences. Education, as Guyau conceives it, is essentially an instrument by which society maintains and furthers itself. "The entire system of education ought to be directed towards the maintenance and the progress of the race."

The process of education is instructively illustrated by the analogy of hypnotic suggestion. Such suggestion resembles instinct in that it sets up a consciousness of obligation, of necessity, a feeling in the patient's mind that he must do the thing suggested. "Suggestion is the transformation by which an organism more passive tends to bring itself into unison with an organism more active; this last dominates the first, and comes to rule its external movements, its volitions, its internal convictions." The application of this idea to morality is interesting and suggestive. Moral education, which is the branch of education first discussed, is viewed as a modification of instinct or inherited habit. Morality is a long way from being a pure product of education. And here Guyau attaches himself to Darwin and finds the genesis of a truly moral consciousness in the very fact of a sufficient complexity of life to supply a contention of impulses, and a persistence (*obsession*) of the more deeply-rooted instinct. "Duty is the consciousness of a certain internal power of a nature superior to all the other powers." It is a mistake to suppose, as is often done, that duty involves a feeling of necessity or constraint. The idea of duty emerges with the recognition by the individual within himself of a hierarchy of impulses and motives, the higher of which—idea-forces or rational motives—are seen by deliberative reflexion to be higher or better just because they represent a larger area of life. This larger area of life is that which the individual shares with others, that in which he lives as a social being. In this way the idea of duty, even when conceived as a pure result of individual evolution, has a social significance and universal validity. "Moral obligation is the force inherent in the idea which approaches most to that of the universal, to the idea of the normal for us and for all beings." It follows that English writers are wrong "to confound too absolutely morality and social instinct". At the same time our author has to admit that "if it is true that the individual might of itself have reached an embryonic moral obligation, it is equally true that moral obligation takes an altogether new aspect when considered from the social point of view". Under this aspect it resolves itself into "a profound feeling of solidarity". The identity of this social with the individual conception of morality is found in the

new scientific doctrine already referred to, that the individual himself is already a society, and that his conscious deliberation and preferential approval of the best represents the "intra-organic solidarity" among all the constituent cells. The discussion of morality and moral education is brought to a close by a careful reconsideration of the parts respectively assignable to heredity and education in the production of mind and character. The kind of *reductio ad absurdum* by which Guyau refutes the idea of Prof. Ribot and apparently of Mr. F. Galton, that the influence of education is at its minimum in the case of the great man, is among the most striking things in the volume.

Next to moral education Guyau takes up physical, and lastly, as the least important (the order of treatment is suggestive), intellectual education. Here he lends excellent support to Mr. Spencer, Mr. Grant Allen and others in their insistence on the sociological point of view in education. Although much of these chapters has a special bearing on the French system, it is full of instruction for all who concern themselves with the educational problem. Never, perhaps, has the fundamental error underlying our present excessively narrowed and intensified intellectual culture been more clearly demonstrated in the light of scientific principles than in this volume. To Guyau every individual is the temporary depository of a part of the force of the race, and our modern system of education instead of aiming at preserving this in its most efficient form seems rather bent on consuming it. The whole discussion is brought to a close with an admirable chapter on "The End of Evolution and Education," in which the author effectually lays the apprehension that human life will grow less conscious and more automatic as the race is evolved.

It will be seen from this sketch of Guyau's argument that his sociological enthusiasm enables him to deal freshly and fruitfully with the several points considered. If, however, one goes on to ask what is the whole philosophical value of his sociological conception, one soon recognises that it is inadequate for its purpose. This is most strikingly seen, perhaps, in the volume on Art. The "sociological point of view" is, no doubt, a very important one here, but it supplies no philosophic explanation of the distinctive attributes of beauty or of its artistic realisation. The function assigned to Art by Guyau is, as has already been suggested, too wide. Art is not the only agency by which emotion is sympathetically transmitted, nor is the effect of beauty fully and clearly defined by such a formula. Art has always had an intensely individual and even anti-social side, and much of the poetry of the world has had its root-impulse in a cultivated Egoism. Again, the sociological idea carries us but a little way in the determination of the content and form of Art. The disregard by Guyau of the sensual element in beauty, and the scanty recognition of its formal aspect, very well illustrate the inadequacy of the sociological point of view in æsthetics. Much the same ab-

stract one-sidedness of conception meets us in the treatment of the ethical problem. Only that here, oddly enough, it is the sociological view of the individual that seems at fault. The *differentia* of moral feeling is not determined by saying that it is the outcome of a system of psychical cells that as organically united somehow desiderate harmony of relations. It presupposes the larger system of the community with its intensely conscious processes of colliding volition, and discrimination of the immense inequality between 'my' will and the collective will of others. And here it is not a little strange that Guyau's study of hypnotic suggestion with its resulting sense of compulsion did not lead him on the track of the idea that it is through contact with an extraneous will, a will representative of a whole system of wills, and therefore masterful, that each of us has learnt to say 'I ought' and 'I must'.

JAMES SULLY.

Die Lebensanschauungen der grossen Denker. Eine Entwickelungsgeschichte des Lebensproblems der Menschheit von Plato bis zur Gegenwart. Von RUDOLF EUCKEN, Professor in Jena. Leipzig: Veit & Co., 1890. Pp. viii., 496.

In former writings, several of which have been noticed in MIND, Prof. Eucken has put forward some distinctive views on the historical movement of philosophy in the past and on the currents of philosophic thought that are most powerful in the present. Hitherto his historical ideas have only found incidental expression in the separate treatment of particular thinkers. His view of present philosophical opinion has been developed independently in *Die Einheit des Geisteslebens in Bewusstsein und That der Menschheit* (see MIND xiii. 461). Referring readers to that work for a more detailed examination of philosophical thought in its bearing on life at the present day, he now gives a supplement to it in the form of a connected series of studies of the views of life that have received philosophical embodiment at the hands of the great thinkers who seem to him best to represent (or in so far as they seem to him to represent) their own ages. The result is that his view of present philosophy gains in concrete interest and that his historical theorising conveys a more distinct total impression.

Prof. Eucken's work might be called a history of European ideals with a view to the determination of the ideal for the present time. Setting out from the "national Greek" view of life, he begins with an account of the philosophies of Plato and Aristotle; Aristotle being, in his view, the most consistent interpreter of the purely Greek spirit, and Plato, though not so wholly Greek as Aristotle, still in important respects a typical representative of earlier as distinguished from later antiquity. Here is found already the problem of reconciling the claims of personal

and impersonal being, which remains central all through the development. Is human life, considered theoretically, simply a phase of non-personal being, or has it a relation to a transcendent personality? Ought it to be subordinated practically to an external process, or to be lived in accordance with an inward ideal? It is only later that these questions will be definitely put; but they are already seeking formulation. In the period of Greek freedom they had found a provisional answer in a view which, while tending to subordinate the individual man to an impersonal universe in the theoretical relation, and in the practical relation to a State that claimed to control his whole life in its own interests, yet did not entirely suppress personality. For the universe was then nearer to man through the absence of the trenchant modern distinction between mind and nature; and the individual Greek citizen spontaneously found satisfaction in the personal development made possible by the life of the city. "What for us moderns lies as an ultimate aim at a distance out of sight, is here boldly and largely grasped by the thinker in an anticipatory solution." When Greek freedom is lost, and at the same time the non-Hellenic world comes more into view, "man is thrown from possession into search". The problem, which now presents itself, of an individual life to be lived without aid from spontaneously harmonious relations to natural and political surroundings, is solved in different fashions by the philosophic schools of later antiquity. The Stoics raise the specifically ethical problem to independence. The Neo-Platonists arrive at a properly religious conception, and place the ideal wholly in an inward life. The Neo-Platonist "inwardness," however, remains strongly tinged by the "intellectualism" of antiquity. God and man are conceived under the form of intelligence more than of moral personality. In the meantime Christianity has appeared, with its promise of giving full satisfaction to the demand for a new ideal of personal life by bringing man, conceived as essentially a moral personality, into relation with God, conceived as the transcendent moral and personal cause of all things. The entrance of Christianity is thus "the greatest act of emancipation in the history of the world". That the character of an emancipation was so soon lost is to be explained by the internal decay of the ancient world, which had no longer the vigour to respond to the impulse towards a renewed moral life, but by the weight of its political organisation and the rigid intellectual form of its philosophies imposed on Christian life the dogmas and discipline of the Catholic Church. During the mediæval period the inward life was preserved by the mystics, and at the Reformation the time had at length come for a successful effort to revive the ideal of moral personality in its earlier Christian form and not under the Catholic form of a synthesis of Christian with Greek and Roman elements. Much, however, still remains to be done. The Reformers did

not get so near as they thought to primitive Christianity; and the restoration of the intellectualism of antiquity, proceeding from the Renaissance and resulting in the more thoroughgoing modern intellectualism, has necessitated a new effort at reconciliation of opposite theoretical views and practical ideals. Such a reconciliation, Prof. Eucken suggests (p. 154), may be found in the affirmation of an "inward and spiritual" miracle, together with the rejection of "physical" miracle. That revival of the life at once of Christianity and of classical antiquity which constitutes the deeper basis of the new world has now, however, to contend with the specifically and narrowly "modern" ideal of "dynamism," or the putting forth of the greatest possible activity in the movement of civilisation. From the two opposite philosophical points of view of "Naturalism" and "Intellectualism" (in a more special sense), the whole movement of things (human life included) is regarded either as a purely natural process or as a logical process of a cosmical reason. The individual thus comes to be thought of as having his reality and his true life as a mere link in an external process which, whether rational or only natural, is in either case impersonal. "Intellectualism" and "Naturalism," however, are in their application to the detail of life in irreconcilable opposition; and the elements of civilisation derived from classical culture and from Christianity, opposed as they are equally to the ideal of mere "expenditure of force," are, after all, the most genuinely modern. When confronted with Kant's doctrine of the moral personality of man—the most distinctively Christian of modern philosophical doctrines and the highest point reached by modern philosophy—the "dynamical" ideal of life breaks up. For a time like the present, with its conflicting tendencies, that ideal is, indeed, least of all adapted. The problem before us is one of selection and reconciliation of beliefs. In the final reconciliation, the convictions required by the moral personality must take the lead. An essential requirement for the personal moral ideal is dependence on a transcendent personality. The reconciliation of the classical and modern ideals with the Christian ideal must consist, therefore, in the carrying on of intellectual life and of the practical work of civilisation under the dominance of the personal religious life. This, in accordance with the principle of Protestantism, must be free, not constrained under a uniform external system.

The parts of Prof. Eucken's historical sketch that are likely to meet with acceptance or rejection according to the individual point of view of the reader being left aside, a brief criticism may here be made on what seems a fundamental inconsistency, or at least unreconciled juxtaposition, of views. Catholicism, Prof. Eucken holds, is entirely the result of a "synthesis" of classical and Christian elements, not at all of a subjugation of the classical world by a new force from without. Among the philosophies

that contributed to the formation of the Catholic system, Neo-Platonism appears to him exceptionally important: so much so that he interposes his account of Plotinus between accounts of the older Christian Fathers and of Augustine, and dismisses the later Neo-Platonists as of no significance, because non-Christian. Plotinus, we are told (p. 233), destroyed what he wished to preserve—that is, the ancient world of thought, and promoted what he wished to destroy—that is, Christianity. The "fixation," the "standstill," of the ecclesiastical system is explained as the last result of ancient ideas, and the system itself as their legitimate outcome; and the "life-weariness" that made the ancient world, instead of carrying Christianity forward, compel it into rigid limits, is found to have arrived at the extreme in the Neo-Platonists. Yet, after all this, Prof. Eucken insists, not only that it was from Neo-Platonist writings that the mystics of the Middle Age drew the inspiration by which they kept up the "internal life of feeling," but also that emancipation from the mediæval system of thought at the Renaissance was attained in the philosophical field above all by a return to Neo-Platonism as a new starting-point (p. 256).

At once the most distinctive and the most noteworthy point of Prof. Eucken's book, as of its immediate predecessor, is his opposition to modern "dynamism"—which, at the same time, he describes not unsympathetically. Probably no one has better portrayed that materialistic mysticism of the 'gospel of work' with which we are all familiar. Its power to ally itself with either of two opposing systems of theoretical philosophy, and thus to take on the illusory appearance of a philosophy of life, is well shown; though, perhaps, Prof. Eucken looks upon it rather as the outcome of those systems than as a mood that attaches itself to them. In any case he brings forward good reasons for holding that it is only superficially modern. The subjectivity of modern philosophy must of itself prevent us from finding any permanent solution of the problems of life in action prior to theoretical insight or personal conviction.

That the "intellectualism" (in the more general sense) of modern philosophy is destined to take the subordinate place assigned to it in the determination of belief is not at all so certain. It is remarkable that Prof. Eucken himself makes the interesting concession that Kant's exclusive "moralism" has caused him, in theoretical philosophy, to fall short of the great thinkers of the seventeenth century, and that here, though not elsewhere, the nineteenth century has gone beyond him (p. 456). Prof. Eucken's own reconciliation of the demands of intellect and of the moral personality by the admission of the miraculous in the realm of mind but not of nature does not seem very hopeful. In his present work it is only suggested. If it were developed, there are obvious difficulties that it would have to meet which are not touched upon.

THOMAS WHITTAKER.

VI.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

The History of Human Marriage. Part I. "The Origin of Human Marriage." By EDWARD WESTERMARCK. Helsingfors, 1889. Pp. 153.

This first part of a work upon which the author has been for a considerable time engaged, and which he has now practically completed, is issued as an academical dissertation for doctor's degree and *venia docendi* at the University of Helsingfors. There is interest in noting that it has been written in English as a means of bringing the results of the author's research under the ken of a far wider circle of readers than he could have reached in the Swedish or Finnish speech; and by preference in English, because he found that in England he could most effectively study all work previously done upon his subject and best make quest for new information from missionaries now labouring among backward races over the world. In the body of the work, which, after the remarkable promise of the present first part, it may be hoped will soon appear in its completeness, the author will treat of "Courtship and the Sexual Selection of Man, the Conclusion of Human Marriage, with its various Forms and Duration". On the question of "Origin" thus far handled, he argues with great force against the hypothesis of Promiscuity as the stage through which Marriage in any of its forms (polyandry, polygyny, &c.) is supposed by the chief recent authorities to have been reached. This he does, not only by a critical survey of all the available evidence regarding early man or the savage races of the present day, but also by comparative study of the sexual relations obtaining among animals generally. Nor does he confine himself to merely anthropolgical and zoological data: the psychological element in human life also has its importance duly recognised. An inquirer who sets to work upon a perplexed sociological subject in so comprehensive and intelligent a spirit deserves cordial welcome. And as for Dr. Westermarck's English, it is seldom that he does not write as if to the manner born.

The Origin of Human Reason: Being an Examination of Recent Hypotheses concerning it. By ST. GEORGE MIVART, Ph.D., M.D., F.R.S. London: Kegan Paul, Trench & Co., 1889. Pp. 327.

A polemical supplement to the author's recent work *On Truth* (reviewed in MIND xiv. 420); the argument, in eight chapters ("Introductory," "Mental States and Processes," "Reason and Language," "Reason and Consciousness," "Reason and the Infant," "Reason and Divers Tongues," "Reason and Primitive Man," "Concluding Remarks"), being directed against Mr. Romanes's *Origin of Human Faculty*, but having also a more general reference. Mr. Mivart's contentions are summed up in the following two sentences taken from chapter vi.:—"Between the mere language of feeling and the sensuous cognition of brutes, on the one hand, and intellectual language and perception on the other, there remains an essential distinction of kind—that is, of origin. Whether we look to the psychogenesis of the individual or to that of the race, we alike see the full force of the distinction, and recognise, in harmony therewith, the entire absence of any evidence of transition from the emotional sign-making power of the brute to the faculty of

conceptual expression possessed by man." The discussion, conducted, as it is, from the point of view of "the School," though appealing to outsiders, has a philosophic interest of its own; showing how the Scholastic positions are maintained in detail against the Darwinian view of human origins. Any objection that may be made to the position, taken literally, that man's nature, being intellectual, "absolutely differs in kind from that of the highest brute, from the first moment of his existence" (p. 20), is met by the qualification, "in potentiality". The absolute distinction "is between a nature which can, and a nature which cannot, possess conceptual power" (p. 225). Man everywhere has and always had conceptual power in act or in potentiality. No brute "can" have this power. This is a difference of kind; and a real difference of kind "cannot" be evolved.

Physiognomy and Expression. By PAOLO MANTEGAZZA, Director of the National Museum of Anthropology, Florence, &c. ("The Contemporary Science Series.") London: Walter Scott, [1890]. Pp. x., 327.

With one new added chapter on "The Physiognomy of Gestures and the Expression of Clothes," this is a translation of a book that, in its French dress, was noticed in MIND x. 145. The fanciful illustrations of the French edition are not reproduced. It reads in English very well; and no more lively supplement to Darwin's classical work could be desired. It is, at the same time, a book of original observation. The author's Italian *positivity* (to turn an old word to a present-day use) appears in the remark of his new chapter: "In biology and in psychology (which is the same thing)," &c. (Occasion may here be taken to correct the misprint of "Indian" for "Italian" in one sentence of the earlier notice in MIND.)

Elements of Logic as a Science of Propositions. By E. E. CONSTANCE JONES, Lecturer in Moral Sciences, Girton College, Cambridge. Edinburgh: T. & T. Clark, 1890. Pp. xv., 208.

This book aims at a unification and generalisation of Logic, treating it as non-psychological, as the Science of Propositions, and, therefore, of universal application. The book is divided into two parts: i. treating of the Import of Propositions (including a consideration of Terms); and ii. dealing with the Relations of Propositions, under which head are included Immediate and Mediate Inferences. A new classification of Fallacies is put forward, and solutions of certain logical difficulties are suggested—*e.g.*, the place of adjectives in a classification of Terms, the specific characteristic of *à fortiori* arguments, the place and meaning of Quantification of the Predicate, the Ground of Induction, and the meaning of the Laws of Thought. A complete classification of Terms, Propositions and Inferences is attempted.

JOHANNIS WYCLIF *Tractatus de Apostasia.* Now first edited from the Vienna MSS. 1343 and 3935. By MICHAEL HENRY DZIEWICKI. London: Published for the Wyclif Society by Trübner & Co., 1889. Pp. xxxvi., 259.

This very careful edition of Wyclif's tract *De Apostasia* is preceded by an introduction describing the MSS. and analysing the argument. The tract consists, in great part, of a discussion of the doctrine of Transubstantiation; but connected with the theological argument there are some points of philosophical interest. Wyclif, as is known from his philosophical writings, was a Realist. The editor, accordingly, prefaces

his account of the polemic against Nominalism in the *De Apostasia* by a brief synopsis of the doctrine of the Scholastic Realists and Ultra-Realists (pp. xix.-xxi.). Anticipations of some of Descartes' arguments (relative to the Sacrament) in the *Réponses aux objections de M. Arnauld* are found in Wyclif (p. xvi.). The Thomistic doctrine is very clearly stated (p. xxviii.). Points of general interest are not neglected; such as Wyclif's socialistic positions (pp. xii., xxvii.) and his revolutionary attitude as regards obedience to the authority of the Church (pp. x., xxiv.).

Fabian Essays in Socialism. By G. BERNARD SHAW, SIDNEY WEBB, WILLIAM CLARKE, SYDNEY OLIVIER, ANNIE BESANT, GRAHAM WALLAS and HUBERT BLAND. Edited by G. BERNARD SHAW. London: The Fabian Society, 1889. Pp. vii., 233.

These essays form collectively an interesting expression of one type of contemporary thinking and feeling. "The writers are all Social Democrats, with a common conviction of the necessity of vesting the organisation of industry and the material of production in a State identified with the whole people by complete Democracy." The ideal, to the realisation of which by a gradual process of evolution the writers look forward, is compulsory work for all under the direction of municipalities co-ordinated by a central government. According to the theoretical view that gets itself expressed, "the world moves from system, through disorder, back again to system". "System" is represented by the Middle Ages, when "every man had his class, and every class its duties"; "disorder" by the "competitive individualism" of modern times. Socialism would once more systematise society, but would substitute democratic equality for the social hierarchy of the Middle Age. All the same, "the oldest socialistic institution of considerable importance and extent" is the Catholic Church; and when society is completely reorganised on socialistic lines and the present "anarchy of opinion" has disappeared, there may again be public teachers of a universally accepted doctrine. Society will then be welded into one class, with "a public opinion of inconceivable weight". For the production of individual types, personal development is to be superseded by "social organisation" (pp. 57-8). "Or rather, the perfect and fitting development of each individual is not necessarily the utmost and highest cultivation of his own personalty, but the filling, in the best possible way, of his humble function in the great social machine". The fullest liberty and the fullest equality being incompatible, a portion of liberty must be sacrificed to equality of comfort (pp. 59-61). The writers do not profess to agree entirely with one another; but, as may be seen, a pretty consistent doctrine can be put together from their essays.

The Promotion of General Happiness. A Utilitarian Essay. By MICHAEL MACMILLAN, B.A., Oxon., Fellow of the Bombay University, and Professor of Logic and Moral Philosophy at Elphinstone College, Bombay. London: Swan Sonnenschein & Co., 1890. Pp. vi., 186.

An unprejudiced examination of the effects of various circumstances on the "general happiness" so far as this can be estimated by summation. The subjects discussed are "Knowledge and Education," "Inventive Knowledge," "Medical Knowledge," "Aid to Natural Selection," "Amusements," "Changes in Law and Custom," "Vegetarianism and Total Abstinence," "The Moral Virtues and Religion". Chapter viii., on the anti-felicific efforts of some Oriental institutions, is interesting from the author's residence in India.

Etude sur quelques Paralysies d'origine psychique. Essai de Psychologie Expérimentale. Par A. GRAFÉ, Professeur à l'Athénée royal de Liège. Bruxelles: F. Hayez, 1889. Pp. 122.

The special aim of this study is to determine the psychological cause of a kind of paralysis in which the patients find it impossible to move one or other of their limbs unless they can follow the movements of the limb with the eye. After giving a careful account of all the recorded cases the author goes on to attempt first a physiological explanation. The physiological explanation, he finds, can only be a certain derangement of the physical concomitants of associated sensations. Before the action can take place, the patient requires a particular order of sensations different from the usual one; and this requirement may be the consequence of some abnormal association. This explanation, however, is too general. The problem is to determine why in this particular case a particular order and no other is required. For a definite solution, we must go to psychology. The author's psychological explanation depends on a theory of which the central point is that ability to bring about changes in the external world is in every case the result of a certain grouping of images of the muscular sense. In a volition there are representations of the end and of the means. The "medial representations" are always motor images. Education of the will carries with it reduction of the medial representations to a low degree of consciousness. Selection of the means in habitual as in instinctive actions takes place entirely without our knowledge. The unconsciousness in which the medial representations are involved, however, is never absolute. They merely pass into a kind of "penumbra" of consciousness. If, then, in the form of paralysis under investigation, we suppose that there is a "weakening" of the sub-conscious "medial representations," we shall be able to explain why, although the end is distinctly represented, the appropriate movements are not produced. The reason is that the intensity of the medial representations is no longer sufficient to bring about the series of movements that leads to the desired result. Naturally the patient cannot discover this for himself; for under ordinary circumstances he is not aware of the presence of the medial representations, and consequently cannot directly become aware of their absence. The explanation, however, is confirmed by many other pathological facts (cited by the author at length); and the verification is supplied in the particular case by the manner in which the movements cease either immediately or almost immediately with suppression of "visual control". That visual control should make action possible follows at once from what has been said of the function of the medial representations. For when these links in the ideal process of action are weakened, what is required is to revive them; and they are revived by the detailed apprehension of every step in the external process. Revival, under the particular circumstances of the patients experimented on—who as a rule suffer from anæsthesia of the limbs involved—can accordingly be obtained best through the visual sense. When it can be obtained otherwise, the power of movement is recovered just as when it is made possible by "visual control".

J. PUTSAGE. *La Foi, la Force et la Raison.* Bruxelles: Imprimerie Veuve Monnom, 1890. Pp. 60.

M. Putsage here gives in brief form a statement of the philosophical doctrine set forth in his *Etudes de Science réelle* (MIND xiv. 293) along with a more definite view of the reorganisation of society to which he looks

forward. The pamphlet, like the larger book, is worth reading, both for the interest of some of the author's philosophical positions and for the social aspiration that finds utterance in it. His doctrine might be described as a new Averroism, if it were not that for the one active Intellect he substitutes (apparently) a multitude of "immaterial individualities," from the union of which with different material organisms human personalities result. Individuality (but not personality) is eternal; and "sensibility" is the same in all men so far as they are rational. An eternal impersonal justice is supreme in the universe, and is realised in the succession of lives of each individual soul. As soon as the existence of this impersonal moral order is generally recognised, the society that ought to be will actually exist. Hitherto only two kinds of social order have existed—the theocratic order based on "divine right" and maintained by the prohibition of free inquiry into its grounds, and the political order based on naked force. The permanent social order will be founded on a common idea of right (which will be in effect a religion), and no sovereignty will be recognised save that of Reason.

La Philosophie de Lamennais. Par PAUL JANET, Membre de l'Institut, &c. Paris: F. Alcan, 1890. Pp. 157.

An interesting study, in three chapters, of the mental history of one whom the author goes rather far in describing as "un personnage unique dans notre siècle," but who certainly in a peculiarly forceful and dramatic manner affords the spectacle of a complete revolution of spirit at a time of life when ideas and purposes are apt to be fixed beyond the possibility of radical change. The study is called forth by the recent publication of a third volume of Lamennais' correspondence, following now upon two others which had been issued by direction of the strenuous man himself (d. 1854). He is viewed successively as the theologian and theocrat of the *Essai sur l'indifférence en matière de religion* (1817); as the political liberal of the *Progrès de la révolution* (1829) and of the short-lived newspaper *l'Avenir* (from 1830), who passed, after the papal condemnation (1833), into the revolutionary seer of the *Paroles d'un croyant* (1834) and later pieces of less powerful rhetoric; finally as the speculative thinker of the *Esquisse de philosophie* (1841-6), in which he essayed an intellectual construction not less systematic and far more essentially philosophical than the contemporaneous achievement of Comte. Under the two aspects of metaphysician and æsthetician, Prof. Janet brings the Lamennais of the *Esquisse* into striking and instructive relation with other philosophers of the century whose speculative work has not, like his, been cast into the shade by life-deeds of a more stirring cast. Interesting particulars are given at the beginning of the little volume regarding the circumstances in which Lamennais took his first communion as late as at the age of 22, and clerical orders not till he was 34. They reveal a state of mind which, while helping to explain the tense ecclesiasticism of the *Essai sur l'indifférence* published within three years of his ordination, also makes less surprising the *volte-face* of his mature age.

Essai sur les Données immédiates de la Conscience. Par HENRI BERGSON, Ancien élève de l'Ecole normale supérieure, Professeur de Philosophie au Collège Rollin, Docteur ès lettres. Paris: F. Alcan, 1889. Pp. viii., 183.

By an investigation of the distinction between the physical point of view and the point of view of the immediate consciousness of mental states, the author seeks to establish a conception of free-will. The error

of determinists and indeterminists alike, he contends, is in viewing consciousness under forms derived from the external world, that is, under spatial forms. Thus viewed, it inevitably appears as an object of scientific law, and therefore as determined. Liberty, accordingly, is denied not only by determinists, but, unconsciously, by indeterminists also; since, by defining it, they bring it under objective determination. Not till the interpretation of consciousness is purified of all objective reference—as physical science has been purified of all subjective reference—does the difficulty disappear. In order to show how this purification can be effected, the author studies in the preliminary chapters (1) "the intensity of psychological states," and (2) "the multiplicity of states of consciousness: the idea of duration"; going on afterwards to treat of (3) "the organisation of states of consciousness: the idea of liberty". First, he finds that the idea of intensity, in its psychological application, ought to be cleared of all quantitative reference; magnitude being essentially objective. Secondly, "duration within us" ought to be cleared of all reference to number; for the moments of internal duration are not external to one another. Without us there is no "succession"; within us there is no "reciprocal externality". Our consciousness puts the idea of succession into things; things, with their spatial order, cause us to externalise in relation to one another the successive moments of our internal duration. Objective science has succeeded in dissociating the elements of extension and duration for the benefit of extension; psychology must attempt it for the benefit of duration. The dissociation once effected, it is seen that while space is a "homogeneous medium" duration is essentially heterogeneous. "Time," conceived as a homogeneous internal medium, is not pure duration, but duration brought under the form of extension and conceived as filled with distinct and numerable successive states. In reality there are no distinct successive states of consciousness recurring in their identity at successive intervals. All interpenetrate one another; and since, so far as they are distinguishable, they are unique in kind, psychical states never reproduce themselves. They cannot, therefore, reproduce their "effects". The relation of a state to that from which it proceeds cannot be expressed by a law. The very idea of necessary determination here loses all meaning. Thus, to become free, we have only to recognise our freedom. We recognise our freedom in those moments when we turn from the objective attitude and seize upon ourselves. "To act freely is to resume consciousness of oneself, to replace oneself in pure duration."

Dott. Luigi Credaro, Prof. di filosofia al R. Liceo Umberto I. *Lo Scetticismo degli Accademici.* Parte Prima. Le fonti—La storia esterna—La dottrina fondamentale. Roma: G. Balbi, 1889. Pp. 262.

This preliminary part of a work on the New Academy is occupied chiefly with an examination of the authorities for its history and doctrine (especially Cicero) and with a statement of the sceptical positions of the Academics. Afterwards the author will go on to a statement of their positive doctrine of "Probabilism," and will investigate their relations to the Pyrrhonists and the gradual going over of the school to an eclectic dogmatism. The sceptical Academy, he finds in his present volume, "took the first step towards modern Criticism". Carneades was a precursor of modern ideas in religious philosophy; having been the first to insist on the distinction between science and faith.

Das Problem der Materie in der griechischen Philosophie. Eine historisch-kritische Untersuchung von CLEMENS BÆUMKER. Münster: Aschendorffsche Buchhandlung, 1890. Pp. xv., 436.

This History of the Theories of Matter in Greek Philosophy seems to have all the qualities that confer classical rank on a work of the kind. What is especially noteworthy in it is the exactitude of historical discrimination among the different periods of antiquity with their differences of outlook, and the resulting clearness of the general view of development that is given. The author's clearness of view is made manifest in the opening pages by the prominence he gives to the distinction between "Idealism" in modern and in ancient philosophy. Idealism in the theory of knowledge, or "subjective idealism," he points out, is foreign to the whole of antiquity. And, if the term "idealism" is not to lose all determinate sense—as it is in danger of doing when it is employed now with an epistemological and now with an ethical meaning—only those systems must be called idealistic that resolve the object-world into a "content of consciousness". That which is often called Idealism in ancient philosophy ought rather to be called "Concept-Realism" or "Noümenism". This, accordingly, is the name the author consistently gives to the Platonic "ideal theory" and those that approximate to it. The "Realism" of ancient philosophy having thus been brought into view, he has no difficulty in showing that matter, for all ancient thinkers, is something "objective". Though conceived as objective, however, it is not necessarily conceived as corporeal; and while by more than one set of thinkers it is viewed as the only reality, by others it has the lowest possible degree of reality assigned to it. Parmenides even has no theory of matter, in the ancient sense, at all. For the ancient "problem of matter," stated in its most general form, is, 'What is the substratum of change in the corporeal world?' and for Parmenides change is an illusion. All the same, neither Parmenides nor any of his successors arrived at "subjective idealism". In the pre-Socratic period—treated by the author in the first of his five sections ("The Pre-Socratics," "Plato," "Aristotle," "Epicureans and Stoics," "Neo-Platonism and its Precursors")—most thinkers have a theory of matter, and we may find here the starting-points, at least, for all later theories. Not till Aristotle, however, is the problem definitely and distinctly stated. To the question (for example) whether the 'numbers' of the Pythagoreans are corporeal or incorporeal, it has to be answered that the distinction between the corporeal and the incorporeal was not drawn by the Pythagoreans any more than by the other "Nature-philosophers". In the Pythagorean doctrine of matter, however, when it is disengaged, we already find dualism and the germ of concept-realism. The Eleatic metaphysic of 'being,' though not properly a theory of matter, gave the impulse to the theories developed by Anaxagoras, Empedocles and the Atomists. The Atomists (whose theory was directly prepared for by Empedocles) seek, like the Eleatics, for an unchanging 'being,' but with a view to the rational explanation of physical change, which the Eleatics had been content to regard as a subject of mere "opinion". Hence their transformation of 'being' into 'beings,' and their theories of the "mixture" of elements. The Platonic 'matter' (by which is to be understood almost exclusively the 'primary matter' of the *Timæus*) the author finds (with others) to be empty—but objective—space. Here he skilfully distinguishes the actual doctrine of Plato from later interpretations of it, and replies very convincingly to all that has been urged against the view set forth. The Aristotelian conception of matter, he next goes on to show, had its origin in a conscious effort to find a rational explanation of the process of 'becoming'

in the corporeal world. Aristotle's matter, like Plato's, is incorporeal though objective; but for extension as an empty recipient of forms is substituted the bare 'possibility' of being and not-being. The great defect of Plato's view—its identification of mathematical with physical body—was recognised and pointed out by Aristotle. As employed in actual explanation, his own theory tends to pass into the Stoical theory of matter as corporeal substance without quality; but, theoretically, it always remains bare 'possibility,' opposed to the 'form' which (as with Plato) alone gives being. The post-Aristotelian schools, though dependent for their starting-points on what has gone before, are essentially original in their central doctrines. Thus the Stoical theory of matter, while in detail it is a combination of the Aristotelian theory with the Ionic nature-philosophy (especially that of Heraclitus) is original in its explicit materialism. The 'efficient' and 'formal' causes of Aristotle are made by the Stoics to coincide; so that the only opposition that remains for them is that of 'matter' and 'force'. This opposition they resolve into the unity of their monistic system by viewing the shaping principle as not mere motion in matter, but a special kind of matter; the material principle itself being indeterminate body, which can thus be viewed as prior to the active and passive elements into which it is determined. The Epicurean atomism is expounded by the author with not less care than the Stoical doctrine of the continuity of matter. Several points in which the scientific explanations of Epicurus are an advance on those of Democritus are indicated. Combination of older points of view, and at the same time originality in the central thought, are again found in the Neo-Platonists. A special point dwelt on here is the development by the Neo-Platonists and their precursors of the conception of "intelligible matter," or matter within the world of ideas, which appeared in Plato's later speculations as reported by Aristotle. Common to Plato and the Neo-Platonists is the tendency to reduce matter to the lowest possible degree of reality, and on the other side the acceptance of it, whatever negations are accumulated in its definition, as objectively given. To Plotinus and Proclus, idealism in the modern sense is as foreign as to the whole of preceding antiquity. As may be seen, the author lets history itself, as far as is possible, do the work of criticism. This has been his aim all through; his only deviations from the purely historical mode of treatment being a brief comparison of ancient with modern atomism and a criticism of the Aristotelian doctrine of matter.

Grundlinien einer allgemeinen Psychophysiologie. Von A. HERZEN (Lausanne). Leipzig: Ernst Günther's Verlag, 1889. Pp. 150.

Prof. Herzen's present work is intended distinctively as the "Outlines of a *general* Psychophysiology". The greater part of it is devoted to furnishing experimental and deductive arguments for the author's monism. According to his philosophical doctrine, "matter and force are in nature one and the same principle," which, unknown in itself, is ultimately the ground of all explanation; psychical activity being "a molecular motion of nerve-elements". A few pages are given to the exposition of the "physical law of consciousness," already set forth in Italian and French (see MIND iv. 268 and xii. 145). Perhaps this law would be better named—the law of "the physical *conditions* of consciousness". (This is, indeed, the title of Prof. Herzen's French exposition.) Under that name it would be free from the materialistic implication which the author admits to be after all hypothetical. Brought to its purely scientific form, it seems well entitled to take rank as a definitive law.

Das psychologische Problem in der Hamlet-Tragödie. Von der philosophischen Fakultät der Universität Leipzig approbierte Promotionsschrift. Von Dr. HERMANN TÜRCK. Leipzig-Reudnitz : M. Hoffmann, 1890. Pp. 84.

A former study of the author's on *Hamlet* was noticed in MIND xiv. 155. In the present more detailed study he first devotes some space to criticism of earlier views of the character of Hamlet—at the same time stating his own view—and then goes on to a "systematic analysis". The view against which his criticism is chiefly directed is that which regards Hamlet as a weak person disqualified for action by reflectiveness and moral scrupulosity. Since its statement by Goethe in *Wilhelm Meister* (though Goethe, as Dr. Türck points out, afterwards saw its inadequacy), this view has become traditional in German criticism—and, indeed, has had scarcely less influence on English criticism. It is here followed into all its modifications, and attacked with great effectiveness by Dr. Türck. In the statement of his own view he formerly described Hamlet's idiosyncrasy by the word "genius," and then sought to characterise genius in general. He now, without using the word, makes Hamlet's character the object of an independent psychological study. His detailed analysis is very instructive, and frequently, if not always, seems to hit the point exactly.

Beispiele zur Logik aus der Mathematik u. Physik: im Anschlusse an F. A. Trendelenburg's *Elementa logices Aristoteleæ* zusammengestellt von Prof. P. FREYER, Dr. Phil. Berlin : W. Weber, 1889. Pp. 56.

This collection of Logical Examples appears to have grown out of a contribution to a Gymnasium-program as far back as 1872. It is calculated for youths who, having reached the closing stage of the gymnasial course at which Logic is expressly taught, have also advanced far enough in Mathematics and Physics to be able to see the applications of logical principles which these sciences, more clearly than any others, exemplify. The author's idea of bringing the two kinds of discipline (logical and scientific) into such direct relation is excellent; and, in following the lines of Trendelenburg's *Elementa* (with the supplementary *Erläuterungen*), he also does the best that could be for a class of learners whose previous training has been mainly literary. The tract is warmly to be commended to teachers of Logic and to all who wish to see it made (as it easily might be) not only useful but attractive to the young.

Einleitung in die christliche Ethik. Von HERMANN WEISS, Dr. und ord. Professor der Theologie in Tübingen. Freiburg i. B. : J. C. B. Mohr (Paul Siebeck), 1889. Pp. viii., 240.

This *Introduction to Christian Ethics*—divided into three chapters: "Morality and Doctrine of Morals" (pp. 1-56); "The Christian idea of the good" (pp. 56-185); "Anthropological" (pp. 186-230)—is notable for its philosophical spirit and for its clear demarcation of the problem of "theological ethics". In distinction from philosophical ethics, the author points out, theological ethics has its foundation in belief in a definite revelation. Such belief, however it is historically conditioned, is at the same time essentially "subjective". It supposes a particular kind of personal experience, and can never be strictly demonstrable. On the other hand, though not to be identified with the morality developed independently of religious faith, Christian morality, in so far as it has pre-conditions in general human experience, comes in several ways under philosophical determination. The expositor of a system of Christian ethics has to choose, for example, between the two opposite

philosophical points of view of "Empiricism" and "Idealism". The choice, according to the author, can only be for "Idealism"—by which he means the position that "the ethical" does not take its origin wholly from "natural" human experience, but in its essential part is derived from a "transcendent" sphere. This realm higher than the empirical is first found in the "ideal nature" of man; in his "rational or spiritual" side. It takes form in the consciousness of an absolute moral law to be realised by means of freedom. The moral law and the freedom of the personality are *a priori*, because originally constitutive and normative, elements of the human mind: but they are not "innate". The *a priori* moral consciousness has been gradually formed in the process of history, and would remain abstract and empty if it did not continually appropriate from concrete experience insight into the realm of "ends" and "goods". Thus there is also an "empirical moment" in the formation of the moral consciousness. The ideal moment is not to be regarded as something externally added to the empirical moment, but as "immanent in the personality". From the religious point of view, this immanence must be held to be the result of a revelation, and the moral law to be a command of God.

Beiträge zur experimentellen Psychologie. Von HUGO MÜNSTERBERG. Heft 3. Freiburg i. B.: J. C. B. Mohr (P. Siebeck), 1890. Pp. 122.

The third part of Dr. Münsterberg's *Beiträge* (see above, p. 234), just issued, is devoted to the single topic of a "New Founding of Psychophysic"—Psychophysic this time understood in the more special sense of the relation between Sensation and Stimulus, which, from the time of Weber and Fechner, has engaged the efforts of so many experimentalists. Detailed notice will follow.

The following NEW EDITIONS have been received:—

Scottish Philosophy: A Comparison of the Scottish and German Answers to Hume. By ANDREW SETH, M.A., &c. Second Edition. Edinburgh and London: William Blackwood & Sons, 1890. Pp. xiv., 222. [The author has made some alterations in this reprint of his first course of "Balfour Philosophical Lectures," which add some four pages in all to the original volume that was reviewed in MIND xi. 267. The new insertions occur chiefly in the third lecture, upon the topic of the alleged impossibility of giving any *philosophical*—however it be with psychological—explanation of our knowledge of extension in terms of unrelated sensation, *i.e.*, of sense-experience which is not already fully constituted percept. Naturally, the author has not been slow to take advantage of the declarations which, as psychologists, Mr. James Ward and Prof. James have made of recent years as to irreductibility of the essential feature of extension; but it may still be doubted whether he rightly claims similar allowance from Prof. Wundt, by speaking of Wundt's assertion of inherent qualitative differences of sensation under the objective designation of "local colouring"—unless, indeed, the word "potential," which, on p. 98, he does not omit before this designation, is meant to suggest that originally and in themselves the differences are intensive only. In any case, Prof. Seth's own position is now stated with distincter articulation than before.]

The Popular Works of JOHANN GOTTLIEB FICHTE. Translated from the German by WILLIAM SMITH, LL.D. With a Memoir of the Author. Fourth Edition, in Two Volumes. Vol. I. "Memoir." "The Vocation

of the Scholar." "The Nature of the Scholar." "The Vocation of Man." Vol. II. "The Characteristics of the Present Age." "The Way towards the Blessed Life, or, The Doctrine of Religion." "Outlines of the Doctrine of Knowledge." London: Trübner & Co., 1889. Pp. 478; ix., 517. [These translations of Fichte's "popular philosophical works" have been once more subjected to a careful revision. First published 1845-9, they have, with the included "Memoir" (i. 1-145), lost nothing of their original interest and value, in spite of all that has later been done for the exposition of German thought to English readers. The present definitive edition is dedicated to the memory of Carlyle.]

The Psychology of Attention. By TH. RIBOT. Authorised Translation. Chicago: *The Open Court* Publishing Co., 1890. Pp. 121. [The French original of this interesting monograph was reviewed in MIND xiv. 278. The translation appears to be done with competence and care. The *Open Court*, both by its translations and otherwise, has now for a considerable time been doing no small work of general philosophic enlightenment.]

Elemente der Psychophysik. Von GUSTAV THEODOR FECHNER. Zweite unveränderte Auflage. 2 Theile. Leipzig: Breitkopf u. Härtel, 1889. Pp. xiii., 346; xii., 571. [The best monument that could be reared to Fechner's memory was a reprint of his path-breaking work of 1860, and this Prof. Wundt (helped by Dr. O. Külpe) has here worthily effected; contenting himself, as was meet in the case of a classic, with only such additions in footnotes as would bring the statements of the *Elemente* into relation with all the later psychophysical work which Fechner went on publishing till the close of his prolonged life. To vol. i. is also added a complete catalogue of all his (exceptionally) varied productions. If an index, and especially a full enough one, had farther been given at the end of vol. ii., nothing would have been left to desire. Looking through the volumes, which are now so fortunately rendered again obtainable, one is struck by the amount and variety of matter of general psychological interest which Fechner was able to include with the severer discussions in which he laid the foundations of a doctrine that has stimulated so much later inquiry.]

RECEIVED also:—

J. Lubbock, *Prehistoric Times* (5th ed.), Williams & Norgate, pp. 637.
Mary Boole, *Logic taught by Love*, Lond., F. Edwards, pp. xii., 176.
A. N. Pearson, *A Search for Knowledge*, Melbourne, Melville & Co., pp. 145.
S. Icard, *La Femme pendant la période menstruelle*, Paris, F. Alcan, pp. 283.
J. Delboeuf, *Magnétiseurs et Médicins*, Paris, F. Alcan, pp. 116.
P. Ceretti, *Saggio circa la Ragione logica*, ii., Torino, Un. Tip.-Ed., pp. 1224.
A. Biese, *Das Metaphorische in der dichterischen Phantasie*, Berlin, A. Haack, pp. 35.
H. Schmidkunz, *Ueber die Abstraction, & Analytische u. synthetische Phantasie*, Halle-Saale, C. E. M. Pfeffer (R. Stricker), pp. 43; vii., 103.
E. Dreher, *Die Physiologie der Tonkunst*, C. E. M. Pfeffer, pp. xi., 122.
F. Marbach, *Die Psychologie des Firmianus Lactantius*, C. E. M. Pfeffer, pp. 80.
W. Windelband, *Geschichte der Philosophie*, 1te Lief., Freib. i. B., J. C. B. Mohr (P. Siebeck), pp. 128.
E. Rohde, *Psyche*, J. C. B. Mohr (P. Siebeck), pp. 294.
Dambor, *Das Heil*, Leip., H. Hartung, pp. viii., 134.
J. Wolff, *Das Bewusstsein u. sein Object*, Berl., Mayer u. Müller, pp. xv., 261.

VII.—FOREIGN PERIODICALS.

American Journal of Psychology.—Vol. ii., No. 4. C. L. Edwards—Folk-lore of Bahama Negroes. C. L. Franklin—On some characteristics of Symbolic Logic. W. H. Burnham—Memory, historically and experimentally considered (iv.). [Closes the historical portion of the study. Recent theories and the experiments of Ebbinghaus and others are discussed. Physiological theories of memory are classified into those in which it is supposed that memory depends upon: (1) a *movement* persisting in the brain, (2) a *trace* or *residuum*, (3) a *disposition*. A useful bibliography of 8 pp. is added.] Psychological Literature. (Nervous System; Experimental; Hypnotism; Miscellaneous). Notes.

Revue Philosophique.—An. xv., No. 1. C. Secrétan—L'économique et la philosophie. [In opposition to the German "historico-ethical" school, the author insists on the deductive character of Political Economy—or, as he prefers to say, Economics—and its dependence on psychological principles. The place of economic science, he finds, is among the moral or practical sciences; the three "ethical" sciences, in the most general sense, being Economics, Morality and Law. The sphere of economic science is "interest" as distinguished from benevolence and duty. Within economics in general, the name "political economy" is rightly applied to the branch that deals with the problem of collective wealth, its augmentation and distribution. The application of the scientific theory to practical ends constitutes an "art"; descriptions of phenomena, or statistics, constitute the "erudition" of the subject. Political Economy, accordingly, has three branches, *viz.*, "erudition," "theory," "art".] B. Bourdon—La certitude. ["Certitude, under its simplest form, is constituted by two intense images . . . associated or dissociated strongly." Strong association is produced especially by rapid suggestion of similar ideas; and rapidity of suggestion is produced by repetition of like images.] A. Naville—Remarques sur l'induction dans les sciences physiques. [The "first principle of induction" is "a rational principle of absolute certitude"; being obtainable analytically from the logical law of identity. Its formula is that the collocation of causes being the same the collocation of effects must be the same. For this formula to be of any service in actual scientific induction, however, we have to add the beliefs (1) that time by itself is not a cause, (2) that space by itself is not a cause, (3) that there are substances of similar nature to the substance experimented on. These beliefs are all involved in the "second principle of induction," which, stated generally, is that identities as well as differences exist among phenomena.] Notes, &c. (Lombroso et Ottolenghi—L'image psychique et l'acuité visuelle dans l'hypnotisme). Analyses, &c. Rev. des Périod. No. 2. A. Fouillée—L'évolutionnisme des idées-forces (i.). [The author's conception of "idea-forces" is taken as the principle of a "monistic, but immanent and experimental," Evolutionism. In this first article, the "idea-force" is opposed to the "idea-reflexion," or mere representation. All states of consciousness may be called "ideas"; and ideas may be called forces in so far as they have an element of activity or efficiency. Physical science can abstract from "force," but psychology cannot; and "psychical laws are more radical than physical laws". It is these laws, and not mere physical laws of movement, that

must furnish the ground of a philosophical theory of evolution. The efficient or active element in the idea is constituted by "appetition, pleasure and pain," which cannot be explained from the representative element in the idea, but is equally primitive with this.] A. Binet—La concurrence des états psychologiques. [A discussion of the mutual conflict of psychical states, not unconnected with the author's article in the January No. of MIND. He here studies (1) the modifications produced in a psychological process by the mere fact of its coinciding with another process; (2) the effects produced when attention, instead of dividing itself among the different phenomena produced in the 'subject,' fixes itself on one, thus determining a state of distraction with regard to all the rest. Among the cases of simultaneous voluntary movements under (1) is the performance of different movements with the two hands. For the explanation of the phenomena observed, M. Binet supposes that each psychical synthesis has a tendency to develop itself in all directions, and so tends to impose its own form on the other. Under (2) are studied cases of "automatism by voluntary distraction". The following conclusions are formulated: (1) When two voluntary psychological phenomena that have not a common end are provoked simultaneously in a person, they often perturb one another. When one phenomenon is voluntary and the other "automatic," the perturbation does not take place, or not to the same extent. (2) The disturbances consist in (*a*) unconsciousness of movements duly performed, (*b*) irregularity in the performance of movements, (*c*) suppression of movements. They are more marked as the intellectual operations required are more complex. (3) Great differences exist between different persons as regards the power to perform intellectual operations simultaneously. (4) When several processes coincide, one of them may show a tendency to impose on the others its particular form or rhythm.] Adam—L'imagination dans la découverte scientifique d'après Bacon. [Although he laid so much stress on method, Bacon did not altogether exclude the guidance of intelligence and the suggestions of imagination from the search for natural causes.] Notes, &c. (P. Lesbazeilles—Un paradoxe psychostatique. G. Sorel—Esthétique et psychophysique. E. Gley et L. Marillier—Sur le sens musculaire). Analyses, &c. No. 3. E. de Roberty—L'évolution de la philosophie. [Criticising Comte and other thinkers, the author arrives at a law of the dependence of philosophy on the state of the special sciences, which he proposes to substitute for Comte's law of the three stages. With this dependence goes a more general order of dependence of the factors of social evolution. The order is—science, philosophy, art, industry; each of the later terms depending directly on all that precede it. Thus industrial evolution is determined by æsthetic, philosophical and scientific ideas; æsthetic evolution by philosophy and science; and philosophical evolution (as it is set forth at length) by the sciences.] A. Fouillée—L'évolutionnisme des idées-forces. ii. Les états de conscience comme facteurs de l'évolution. [M. Fouillée's second article begins with a criticism of the "double-aspect theory," which he finds to be erroneous in so far as it makes physiological processes fundamental and psychological processes their mere accompaniment or "epi-phenomenon" The idea, as state of consciousness, is the index of a movement and the revelation of a force, and, since it does not really exist in isolation, must be regarded as an element in the efficient causation of things. "Real nature knows not our abstractions: feeling and motion are there united." Every cosmical theory that omits consciousness from among the factors of evolution is therefore "*philosophically* insufficient".] A. Binet—Recherches sur les mouvements chez

quelques jeunes enfants. [Experiments were made with young children to elucidate (1) the co-ordination of movements in walking, (2) the bilaterality of movements, (3) automatism, (4) physiological reaction-time. The instinctive character of co-ordination seems to the author to come out strongly, A tendency of movements in general to bilaterality is observed. Distinct examples of "automatism," or movements produced by "suggestion" apart from the conscious will, have been detected. Lastly, the reaction-time of children is found to be very long compared with that of adults.] Analyses, &c. (J. M. Baldwin, *Handbook of Psychology*, i. F. Tönnies, Hobbes's *Elements of Law* and *Behemoth*, &c.). Rev. des Périod. Correspondance (Ch. Henry—Esthétique et psychophysique).

La Critique Philosophique (Nouv. Sér.).—An. v., No. 12. [This, as formerly announced, is the concluding number of the *Critique Philosophique*. In some brief words of farewell ("Pour prendre congé de nos lecteurs") M. Renouvier gives an account of the foundation of the Review eighteen years since, of its aims (its title was at first—*Critique philosophique, scientifique, politique et littéraire*) and of their gradual restriction, from various causes, to the more purely philosophic field. With some remarks on the political and religious application of the Criticist philosophy (the latter carried out for some years by M. Renouvier's other Review, the *Critique Religieuse*) there is an excellent summary of the general philosophic principles of "Neo-Criticism" and statement of its historical relations. The Criticist philosophy claims to be descended at once from Hume and from Kant. Berkeley and Hume, as M. Renouvier puts it in a note, gave in advance the means of correcting the Kantian doctrine, of freeing it from its scholastic bonds and its obscure noümenism, and of bringing it within the terms of the principle of relativity established by its own requirement that the operations of the understanding should confine themselves within the limits of the possible application of the categories to experience. Neo-Criticism is, to a certain extent, in agreement with Positivism; having in common with this the manner of viewing physical causality derived from Hume. Comte, instructed by the application of mathematics to natural phenomena, did what Hume had not done—formulated the idea of physical *law* (which Hume had not disengaged from "experience and habit"); but, from not having "passed through Kant," he always remained at the point of view of a merely empirical phenomenism. The Criticist phenomenism, on the other hand, being "apriorist" as well as analytical, succeeds in reconciling Hume and Kant—the two thinkers who have reached the highest points in the philosophy of method since Descartes. It at once overthrows "substantialist realism"—in M. Renouvier's view the only possible foundation for monism, and opens the way for the postulation of "transcendent truths"—the belief in which is forbidden by positivism. In all that goes beyond empirical laws, the moral law, it holds, has the right to determine the hypotheses accepted. For the Criticist point of view, the three Kantian postulates formulated in the *Practical Reason* remain, and will always remain, the expression of the triple truth arrived at under the guidance of the moral law. While it is the legitimate heir of one great philosophic movement, the Criticist doctrine is foreign to the evolutionary current which seems about to sweep off the whole European world at the end of the present century; and, from this side, it is hostile to Comte's attempt to formulate necessary historical laws of the human mind and of religions. The result of the belief in a fatal evolutionary process without definitive end must be, M. Renouvier contends, a pessimism of the Buddhistic order—

that is, of the order which regards evil as inherent in the nature of things and never to be finally overcome. Here he is almost betrayed into formulating an evolutionary view of his own as to a future movement of thought that is to end in a philosophic battle of Armageddon between "two principles, two irreconcilable modes of philosophising, two manners of comprehending the world"; though he saves himself by a protest against "the fashionable word" Evolution, which he finds himself obliged to use. It will be long, he thinks, before even the first really critical phases of the contest are seen; but it has already begun; and he has fought, at the beginning of hostilities, what he has believed to be the 'good fight'.]

Rivista Italiana di Filosofia.—An. v. 1, No. 1. C. Cantoni—Relazione sul Concorso al premio Reale assegnato alle scienze filosofiche per l'anno 1889. R. Benzoni—Recenti pubblicazioni sul problema della conoscenza. S. Ferrari—La scuola e la filosofia pitagoriche (i.). [The first part of a history of the Pythagoreans. An attempt is made to determine what is due to Pythagoras and to individual members of the school, in spite of the general usage (in Aristotle and others) of speaking of the school collectively.] P. de Nardi—I nuovi Tomisti e la Storia della Filosofia. [If the system of one philosopher could be taken as equivalent to Philosophy, that system would certainly not be Thomism, which was constructed essentially with the polemical purpose of refuting Averroism and is full of imperfections and defects.] Bibliografia, &c.

Rivista di Filosofia Scientifica.—Vol. viii., No. 11. G. Marchesini—Conscio ed inconscio. [Consciousness is "a degree of psychophysical work" which does not necessarily accompany every psychical fact.] F. Gabotto—L'epicureismo di Lorenzo Valla. [In the dialogue *De voluptate ac vero bono.*] F. Pietropaolo—Sulle dottrine ideologiche di P. Galluppi. [Includes brief summaries of three unpublished letters of Galluppi.] Note critiche, &c. (F. de Sarlo—Vecchia e nuova fisiopsicologia). Riv. Bib., &c. No. 12. E. Morselli e E. Tanzi—Contributo sperimentale alla fisiopsicologia dell' ipnotismo. [An experimental study of respiratory and circulatory changes produced in hypnotism: best explained by "suggestion".] F. Gabotto — L'epicureismo nella vita del quattrocento. [Dominant influences in Italy in the fifteenth century were Epicureanism and a Christianity for the most part but not wholly conventional. Epicureanism had ascendancy over other ancient systems because the Latin classics, in which there is little about Aristotle and much about Epicureans and Stoics, were then mostly studied; also the conditions of life were unfavourable to Stoicism.] Note critiche, &c. (F. Puglia—L'antropologia criminale). Riv. Bib., &c.

Zeitschrift für Philosophie, &c.—Bd. xcvi., Heft 2. G. Heymans—Noch einmal: Analytisch, synthetisch. R. Seydel—Entgegnung. L. Busse—Beiträge zur Entwicklungsgeschichte Spinozas, v. (Schluss). G. v. Glasenapp—Die Grundlage der Sittlichkeit. [Man has always the consciousness *that* there is something he ought to do or leave undone. The power of making ethical distinctions is therefore an original constituent of human nature. *What* particular distinctions men make, on the other hand, depends on experience; even the most general positive maxims being of empirical origin. The ground of obligation the author finds it impossible to assign with certainty. A satisfactory ground would be the existence of a moral Providence; but this cannot be asserted scientifically. Against Utilitarianism he urges that the only "absolute

value" at the basis of the conception of the useful is pleasure, and that the moral judgment has often to decide which is the superior pleasure, and is consequently prior to the utilitarian criterion.] Recensionen, &c.

PHILOSOPHISCHE MONATSHEFTE.—Bd. xxvi., Heft 3, 4. Th. Ziegler—Ethische Fragen und Vorfragen (i.). [Some considerations on the extent to which it is possible for ethics to be scientific, and for ethical science to be of direct practical service. Against "rigorism" the author maintains that in the decision of questions of conduct individual tact has to speak the last word. Ethical science, he finds, necessarily depends on a speculative view of the world. Psychology and history are its two auxiliary sciences.] P. Natorp—Aristoteles und die Eleaten (Schluss). [Aristotle's criticisms of the particular arguments of the Eleatics are examined. He did not himself solve the Eleatic problem, which was —the conflict of the laws of sensibility with the laws of the understanding.] Th. Lipps—Æsthetischer Litteraturbericht (ii.). [Deals chiefly with recent works on the æsthetics of architecture.] Recensionen, &c.

ZEITSCHRIFT FÜR VÖLKERPSYCHOLOGIE U. SPRACHWISSENCSHAFT.—Bd. xix., Heft 4. A. Hirzel—Gleichnisse und Metaphern im Rigveda (Fortsetz.). [The similes and metaphors of the Vedas are minutely compared with the imagery of Homer, Hesiod, Æschylus, Sophocles and Euripides.] A. Mayer—Ein deutzches Schwerttanzspiel aus Ungarn (Nachtrag). [States difficulties in connexion with the author's own explanation of the "sword-dance" as a representation of the slaying of the Winter-god by the Spring-god.] Beurteilungen.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE.—Bd. xiv., Heft 1. M. Radaković—Ueber Fechner's Ableitungen der psychologischen Massformel. H. Höffding—Ueber Wiederkennen, Association und psychische Activität (ii.). [Argues, first, for the psychological fact of "immediate recognition" against Dr. A. Lehmann's attempted experimental disproof of the fact: the objection so frequently brought against mental "observation"—that by direction of the attention it modifies the facts to be investigated—applies no less to psychological experiment. A classification of the kinds of recognition is next given. Afterwards, "contact-association" and "free resemblance-association" are discussed. "Contact-association" is found to presuppose association by similarity, or at least "immediate recognition". "Free resemblance-association" is explained to mean association between similar states that emerge independently in consciousness.] A. Marty —Ueber Sprachreflex, Nativismus und absichtliche Sprachbildung (vi.). [In the course of a defence of his "associational" theory of the origin of language the author traces speech and thought to the human power of abstraction—*i.e.*, attending separately to the elements of intuitions—which animals do not possess to any degree.] J. Petzoldt.—Vitaldifferenz und Erhaltungswerth. R. Wahle—Nachtragsbemerkungen zu den "Fragen betreffend Aehnlichkeit und Intensität". Anzeige, &c.

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE.—Bd. iii., Heft 2. O. Kern —Zu Parmenides. H. Siebeck—Zur Psychologie der Scholastik. [On Roger Bacon, whose most important advance in positive view—as distinguished from general anticipations of the conception of experimental method—is found to have been in psychology and theory of knowledge. Here he is, in his actual doctrine as well as chronologically, the immediate predecessor of Duns Scotus.] F. Tönnies—Siebzehn Briefe des

Thomas Hobbes an Samuel Sorbière, &c. (ii.) [Will be dealt with at length in next MIND.] C. Hebler—Zwei Platonische Stellen. A. Chiappelli —Per la storia della Sofistica greca (ii.). [Among the Sophists two schools are distinguished—the school of "nature-worship" and the school that traced everything characteristic of man to institutions and education; Hippias being viewed as the representative of the former and Protagoras of the latter. The doctrines of the former school resulted logically in despotism, from its claiming for the naturally stronger the right to the full use of his powers; those of the latter in anarchy, from its reducing everything in human affairs to mere convention. Socrates, placing law on the foundation of dispositions inherent in human nature, but requiring education to call them forth, harmonised the opposite theses of Protagoras and Hippias. His position, however, was not maintained by the post-Socratic schools, all of which returned to the doctrine of the ethical supremacy of nature.] W. Dilthey—Kants Aufsatz über Kästner und sein Antheil an einer Recension von Johann Schultz in der Jenaer Literatur-Zeitung. G. Itelson—Zur Geschichte des psychophysischen Problems. [A history of anticipations of the position—urged by many recent writers as invalidating Fechner's psycho-physical law—that psychical intensities are not measurable. Interesting passages are quoted, containing statements of the position and its grounds, from Malebranche, Ploucquet, Galluppi and Eberhard. An opinion of Kant's is found to have been possibly arrived at under the influence of Ploucquet. Finally a passage is cited from De Morgan (on the possibility of a "logarithmic brain") as appearing to anticipate Fechner, but really containing the idea of a "metarithmetic" resembling the "metageometry" that has since been developed.] Berichtigungen und Nachträge. Jahresbericht (H. Oldenberg, E. Zeller, K. Müller). Neueste Erscheinungen.

PHILOSOPHISCHES JAHRBUCH.—Bd. ii., Heft 4. P. V. Cathrein—Das jus gentium im römischen Recht und beim hl. Thomas von Aquin. C. Gutberlet—Der Kampf um die Willensfreiheit. ["Anti-Christian Philosophy," in order to be consistent, is obliged to deny truths which press themselves as facts upon every natural and unprejudiced judgment. One of these "cardinal points" is Free-will. The problem for determinists is to explain away "the sun-clear consciousness of freedom". Indeterminists, on the other side, if there are not reasons that compel us to regard this consciousness as an error, may be permitted to draw the conclusion that Free-will is a secure fact. The arguments of determinists (P. Rée, and F. Paulsen specially examined) are without constraining force. Decision rests with "the general conviction of mankind".] C. T. Isenkrahe—Der Grundirrthum der neuern Philosophie. ["The ground-error of modern philosophy"—that is, of philosophy since Descartes and Locke—which has caused it to fall deeper and deeper into negation, is "the falling-off from the principle of evidence". The truth of knowledge, whether sensible or supersensible, cannot be demonstrated. Knowledge must be taken, as it was by "the old Dogmatism," as immediately evident. The *principle* of Criticism, therefore, must be broken with, and the watchword must be, not "Back to Kant," but "Back to the old School, to the principle of Evidence, to the old *Dogmatism*".] E. Illigens—Die unendliche Menge (i.). Recensionen und Referate, &c.

CORRECTION: In MIND No. 57, p. 159, for P. K. MOKIEVSKY, read P. V. MOKIEVSKY.